



1968 / 1969

ONTARIO DEPARTMENT OF ENERGY AND RESOURCES MANAGEMENT  
ANNUAL REPORT



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**1968 / 1969**  
**ONTARIO DEPARTMENT OF ENERGY AND RESOURCES MANAGEMENT**  
**ANNUAL REPORT**

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To:

THE HONOURABLE GEORGE A. KERR, Q.C.,  
MINISTER OF ENERGY AND RESOURCES MANAGEMENT

Sir,

I have the honour to submit for your approval  
the 1968-1969 Annual Report of the  
Department of Energy and Resources Management.

Respectfully submitted,

Handwritten signature of J. C. Thatcher in cursive.

J. C. Thatcher, DEPUTY MINISTER.



To:

HIS HONOUR, THE LIEUTENANT-GOVERNOR  
OF THE PROVINCE OF ONTARIO

May it please Your Honour,

I have the honour to present the Annual Report  
of the Department of Energy and Resources Management  
for the fiscal year beginning April 1, 1968,  
and ending March 31, 1969.

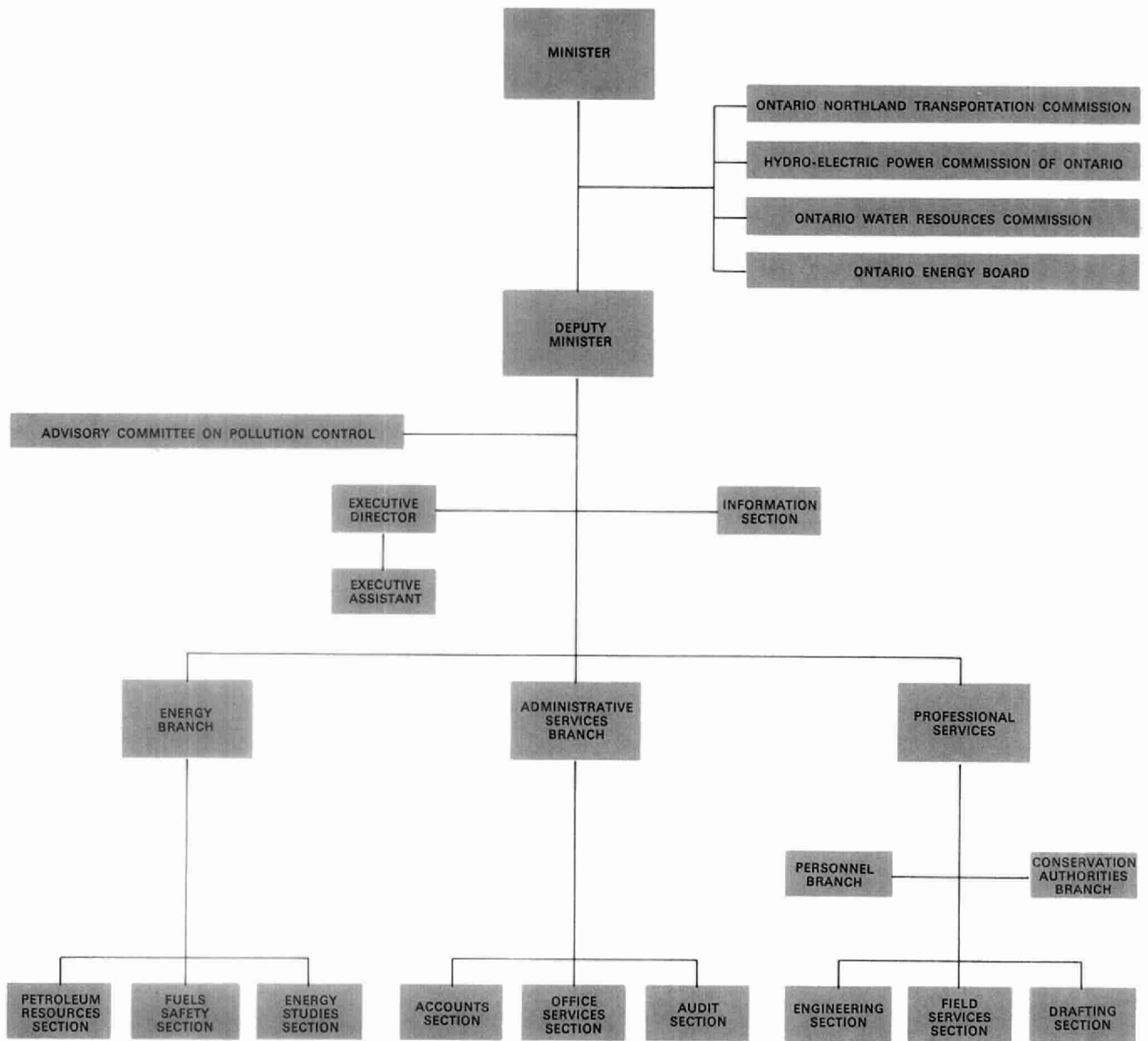
Respectfully submitted,

Handwritten signature of George A. Kerr in cursive.

George A. Kerr, Q.C., MINISTER.



# ORGANIZATION CHART





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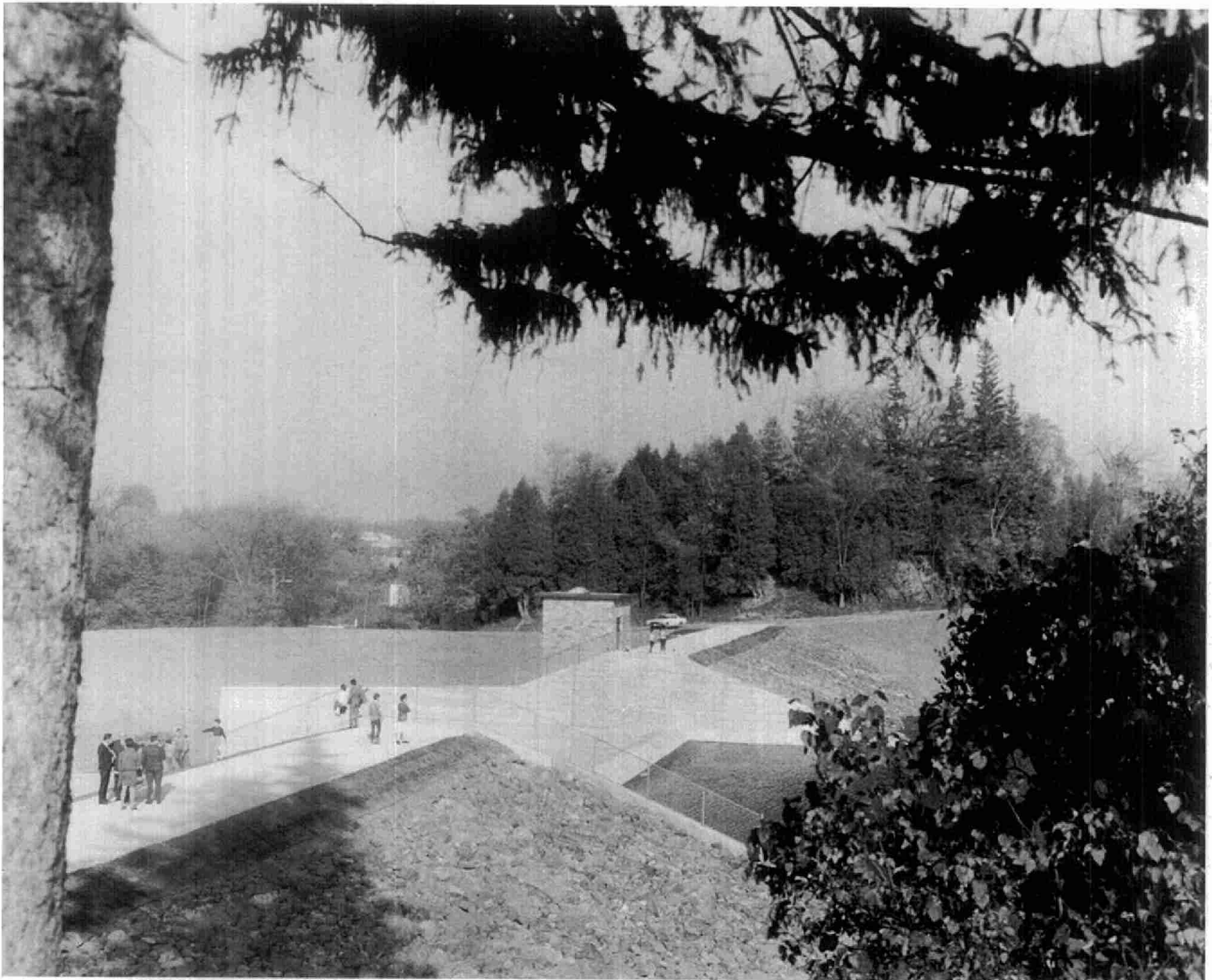
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*The Milne dam on the Rouge River at Markham was officially opened in October, 1968, by the Metropolitan and Toronto Region Authority.*

The Conservation Authorities Branch administers The Conservation Authorities Act, 1968, and directs establishment of conservation programs on a river valley basis in Ontario. According to the Act, the working units of these programs are Conservation Authorities, corporate bodies representing local municipalities on the watersheds of rivers, creeks and streams in the Province. Each Authority is permitted to undertake almost any type of conservation work; however, because Government grants are available for these projects, the Branch has the responsibility of taking the necessary precautions to see that the money granted is wisely spent.

The main concern of the Conservation Authorities Branch, therefore, is the supervision of the organization of Conservation Authorities across Ontario. The Branch

assists and advises Conservation Authorities in planning and carrying out resource management.

The Branch is also responsible for the administration of The Parks Assistance Act under which municipalities may receive financial assistance for the acquisition and development of certain parks.

There are 38 Conservation Authorities, representing over 85 per cent of agricultural southern Ontario and 75 per cent of the population of the Province.

#### HIGHLIGHTS

During the year, the Parkhill Dam was essentially completed and proved its effectiveness as a flood control measure during the spring freshet. The dam was financed and

constructed under Federal/Provincial agreement through the ARDA program.

Another major construction project under way during the year was that of the Morrison-Wedgewood Diversion and the Fourteen Mile Creek Channel Improvement at Oakville in the Halton Region Conservation Authority. The Morrison-Wedgewood Diversion will be completed early in the next fiscal year and final plans are being prepared for the Fourteen Mile Creek Channel Improvement.

Under the Small Reservoir Program, 4 projects were completed and 11 more are under construction. The major project completed under this program and officially opened on October 17, 1968, was the Milne Dam on the Rouge

River at Markham, under the Metropolitan Toronto and Region Conservation Authority.

The Conservation Authorities Act, 1968, was passed by the Legislature and the following Acts were repealed:

- 1 The Conservation Authorities Act with amendments 1960-61, 1961-62, 1962-63, 1966.
- 2 The Grand River Conservation Act, 1938, with amendment 1962-63.
- 3 The Grand River Conservation Authority Act, 1966.

The sliding scale of grants based on population, assessment and authority program whereby authorities could increase their grants from 50 per cent to as high as 75 per cent was approved to come into force January 1, 1969.

#### C1 Conservation Authorities in Ontario

CONSERVATION AUTHORITY	ESTABLISHED	ENLARGED	SQ. MILES
Ausable River	July 30, 1946		665
Big Creek Region	Sept. 9, 1948	Aug. 5, 1954 Jan. 2, 1969	751
Cataraqui Region	Dec. 17, 1964		1,265
Catfish Creek	Feb. 23, 1950	Mar. 29, 1961	189
Central Lake Ontario	July 17, 1958		242
Credit Valley	May 13, 1954	Feb. 17, 1955	383
Crowe Valley	Nov. 6, 1958		775
Ganaraska Region	Oct. 8, 1946	Mar. 15, 1962	229
Grand River	Apr. 6, 1966	Nov. 28, 1968	2,627
Halton Region	Dec. 30, 1963		366
Hamilton Region	May 8, 1958	June 1, 1966 Mar. 16, 1967	185
Holland Valley	Sept. 6, 1951	Mar. 24, 1960	232
Junction Creek	Dec. 12, 1957		125
Kettle Creek	Apr. 1, 1965		199
Lakehead Region	July 15, 1954	Jan. 1, 1963	980
Lower Thames Valley	Feb. 2, 1961	Sept. 19, 1968	914
Lower Trent Region	May 16, 1968		795
Maitland Valley	Sept. 6, 1951	Nov. 16, 1961	984
Mattagami Valley	Nov. 30, 1961		34
Metropolitan Toronto and Region	Feb. 1, 1957		968
Mississippi Valley	May 2, 1968		1,718
Moir River	July 31, 1947		1,056
Napanee Region	Nov. 20, 1947	July 8, 1965	750
Niagara Peninsula	Apr. 30, 1959		936
North Grey Region	June 5, 1957		655
Nottawasaga Valley	May 5, 1960		1,210
Otonabee Region	July 9, 1959	Mar. 24, 1960 Mar. 29, 1961 Mar. 13, 1969	714
Otter Creek	Aug. 5, 1954	Feb. 2, 1956	323
Prince Edward Region	Dec. 9, 1965		390
Raisin Region	Oct. 10, 1963	Feb. 29, 1968	525
Rideau Valley	Mar. 31, 1966		1,581
Sauble Valley	July 17, 1958	Sept. 3, 1959	560
Saugeen Valley	Mar. 16, 1950	May 27, 1954	1,619
Sault Ste. Marie Region	Nov. 21, 1963		83
South Nation River	May 8, 1947		1,512
Sydenham Valley	Jan. 12, 1961		1,052
Upper Thames River	Sept. 18, 1947		1,325
Whitson Valley	Sept. 3, 1959		123

Two new Authorities were formed in the 1968-69 fiscal year, namely, the Mississippi Valley of 1,718 square miles and the Lower Trent Region of 795 square miles. In addition, the Big Creek Region, Grand River, Otonabee Region and Lower Thames Valley Conservation Authorities were enlarged.

The need for specific conservation action, such as pro-

tection from floods, may be the immediate motivating force behind the formation of some Authorities, but most of them cannot analyze or begin to solve the conservation problems in their areas until the watershed has been surveyed and studied by a resource specialist. As a newly established Authority is usually not equipped to carry out this study and examination, the Conservation Authorities

## C2 Departmental Grants to Conservation Authorities, 1968/69

*Under the Conservation Authorities Act, 1968; S.O. 1968 as amended 1968-69*

	ORDINARY	CAPITAL	TOTAL
Ausable River	27,436.27	1,055,796.57	1,083,232.84
Big Creek Region	21,202.50	190,718.05	211,920.55
Cataraqui Region	13,940.96	101,932.39	115,873.35
Catfish Creek	6,166.88	48,827.58	54,994.46
Central Lake Ontario	12,547.67	73,297.19	85,844.86
Credit Valley	30,064.01	818,820.63	848,884.64
Cr��we Valley	2,627.16	2,212.50	4,839.66
Ganaraska Region	3,073.38	719.55	3,792.93
Grand River	223,385.46	847,770.41	1,071,155.87
Halton Region	86,642.12	1,105,510.04	1,192,152.16
Hamilton Region	38,596.86	275,463.65	314,060.51
Holland Valley	8,744.44	61,616.99	70,361.43
Junction Creek	11,654.27	176,669.87	188,324.14
Kettle Creek	3,325.08		3,325.08
Lakehead Region	5,176.78	39,295.96	44,472.74
Lower Thames Valley	15,092.45	258,031.97	273,124.42
Lower Trent Region	589.31		589.31
Maitland Valley	12,682.11	59,177.76	71,859.87
Mattagami Valley	1,534.08	19,843.95	21,378.03
Metropolitan Toronto and Region	483,438.77	3,364,615.54	3,848,054.31
Mississippi Valley	567.35		567.35
Moira River	11,091.48	45,543.53	56,635.01
Napanee Region	6,884.88	31,277.71	38,162.59
Niagara Peninsula	26,550.19	256,113.15	282,663.34
North Grey Region	10,669.75	41,005.63	51,675.38
Nottawasaga Valley	10,374.48	217,623.75	227,998.23
Otonabee Region	24,545.53	11,552.15	36,097.68
Otter Creek	4,400.21	2,610.05	7,010.26
Prince Edward Region	2,346.34	15,198.02	17,544.36
Raisin River	517.99	11,384.39	11,902.38
Rideau Valley	15,708.64	40,345.46	56,054.10
Sauble Valley	4,623.33	9,922.33	14,545.66
Saugeen Valley	19,152.46	11,441.35	30,593.81
Sault Ste. Marie Region	5,938.25	245,784.13	251,722.38
South Nation River	2,119.25	1,611.84	3,731.09
Sydenham Valley	9,414.28	79,563.90	88,978.18
Upper Thames River	99,974.93	569,069.56	669,044.49
Whitson Valley	1,121.87	15,024.57	16,146.44
Miscellaneous		199,094.76	199,094.76
<b>Total Expenditures</b>	<b>\$1,263,921.77</b>	<b>\$10,304,486.88</b>	<b>\$11,568,408.65</b>
<i>LESS Payment from:</i>			
Government of Canada			
a) ARDA		865,086.06 Cr.	865,086.06 Cr.
b) Flood Control		1,931,184.08 Cr.	1,931,184.08 Cr.
<b>Net Expenditures</b>	<b>\$1,263,921.77</b>	<b>\$ 7,508,216.74</b>	<b>\$ 8,772,138.51</b>

Branch, at no expense to the Authority, undertakes preliminary investigation of the resources of the watershed. These surveys are usually the first service the Branch renders to a new Authority.

While differing according to the assets and problems of their watersheds, all Authorities emphasize conservation of the four renewable resources: land, forest, wildlife and

water. Field data from the surveys are analyzed, combined with historical data and information from many sources and conservation reports are prepared for the use of the Authorities.

In 1968, field surveys were conducted in the Sault Ste. Marie Region, the Mississippi Valley and the added portion of the Raisin Region Conservation Authorities.



The conservation and control of water were the major endeavours of most Conservation Authorities during the fiscal year. The bulk of the activity in this field was centred on the construction of small water conservation dams and reservoirs, flood and erosion control works and channel improvements.

A significant number of engineering studies were undertaken by the Conservation Authorities for future works and the mapping of valley lands to prevent encroachment on the flood plains. The engineering studies undertaken included potential dam and reservoir sites, channel improvements and also some overall plans for the future

### C3 Water Control Projects Provincial/Authority Agreements

Cost Sharing: Authority 50%/Ontario 50%

AUTHORITY	PROJECT	LAND	MISC.	TOTAL	AUTHORITY	PROVINCE
Metropolitan Toronto and Region	<i>Etobicoke Flood Plain</i>	61,514	1,183	62,697	31,349	31,348
	<i>Mimico Flood Plain</i>	12,746	253	12,999	6,500	6,499
	<i>Humber Flood Plain</i>	211,792	3,502	215,294	107,647	107,647
	<i>Don Flood Plain</i>	157,443	1,155	158,598	79,299	79,299
	<i>Highland Creek Flood Plain</i>	61,719	3,519	65,238	32,619	32,619
	<i>Rouge River Flood Plain</i>	87,873	31,492	119,365	59,683	59,682
	<i>Duffin Flood Plain</i>	3,663		3,663	1,832	1,831
<b>TOTALS:</b>		<b>\$596,750</b>	<b>\$41,104</b>	<b>\$637,854</b>	<b>\$318,929</b>	<b>\$318,925</b>

### C3A Water Control Projects

#### FLOOD PLAIN LAND ACQUISITION

Cost Sharing: Authority 50%/Ontario 50%

AUTHORITY	PROJECT	AUTHORITY	PROVINCE	TOTAL
Credit Valley	<i>Fletcher Creek</i>	3,053	3,052	6,105
Grand River	<i>Flood Control</i>	17,293	17,293	34,586
Halton Region	<i>Oakville (Town)</i>	150	150	300
Mattagami Valley	<i>Town Creek</i>	4,256	4,257	8,513
Metropolitan Toronto and Region	<i>Etobicoke Flood Plain Lands</i>	31,349	31,348	62,697
	<i>Mimico Flood Plain Lands</i>	6,500	6,499	12,999
	<i>Humber Flood Plain Lands</i>	107,647	107,647	215,294
	<i>Don Flood Plain Lands</i>	79,299	79,299	158,598
	<i>Highland Creek Flood Plain</i>	32,619	32,619	65,238
	<i>Rouge River Flood Plain</i>	59,683	59,682	119,365
	<i>Duffin Flood Plain</i>	1,832	1,831	3,663
Sault Ste. Marie Region	<i>Clark Creek</i>	115,917	115,917	231,834
Sydenham Valley	<i>Dresden (Town)</i>	2,678	2,558	5,236
Sydenham Valley	<i>Strathroy</i>	1,812	1,554	3,366
<b>TOTALS</b>		<b>\$464,088</b>	<b>\$463,706</b>	<b>\$927,794</b>

development and use of available water resources.

#### FEDERAL/PROVINCIAL/AUTHORITY AGREEMENTS

Work on the three multi-million-dollar flood control and water conservation plans under Agreements with the Government of Canada, Government of Ontario and the Conservation Authorities continued throughout the year.

Under these Agreements the two senior governments each contribute 37.5 per cent of the cost and the remaining 25 per cent is raised by the Conservation Authorities from the benefiting municipalities.

The major project under construction during the year was the Halton Region Conservation Authority's Morrison-

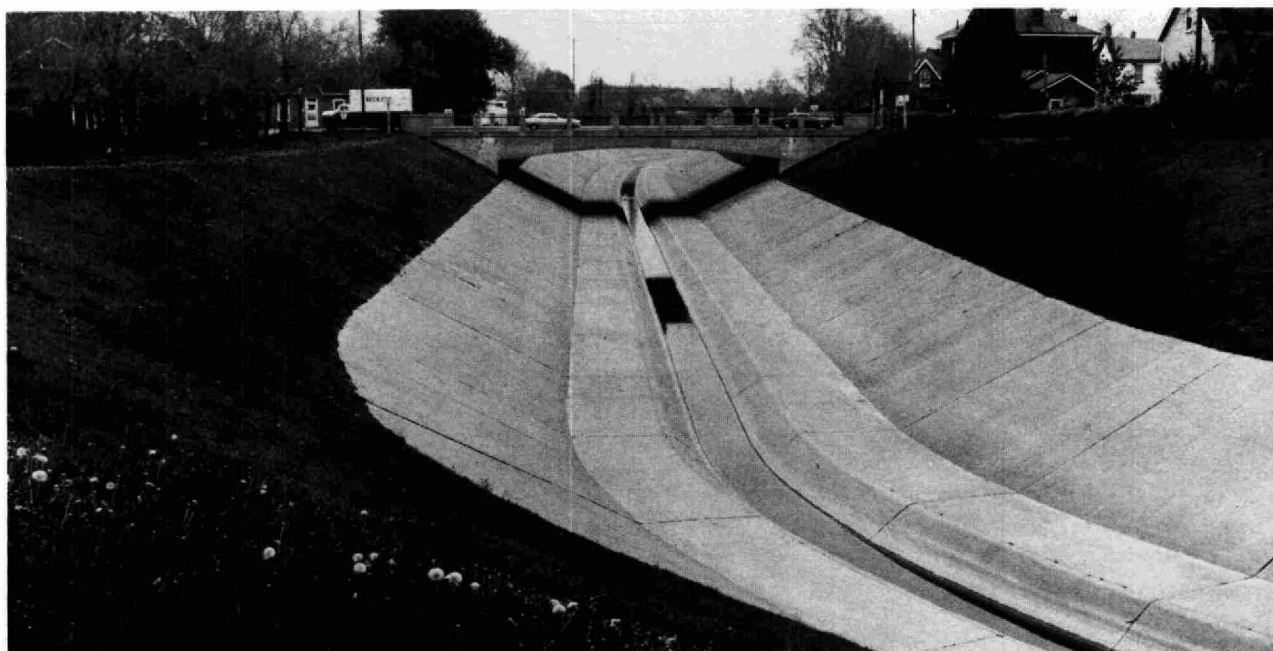
#### C3B Water Control Projects

##### CHANNEL IMPROVEMENTS

Cost Sharing: Authority 50%/Ontario 50%

AUTHORITY	PROJECT	AUTHORITY	PROVINCE	TOTAL
Ausable River	<i>Ausable River</i>	1,282	1,282	2,564
Credit Valley	<i>Melville Hamlet</i>	617	617	1,234
	<i>Glen Williams</i>	2,495	2,495	4,990
Grand River	<i>Laurel Creek Reservoir</i>	522	522	1,044
Halton Region	<i>Indian Creek</i>	1,399	1,399	2,798
Junction Creek	<i>Larch-Elm Culvert</i>	9	10	19
Lakehead Region	<i>McVicar's Creek</i>	15,004	15,548	30,552
	<i>Neebing River</i>	21,210	21,348	42,558
Lower Thames Valley	<i>Emergency Flood Control</i>	10,946	10,946	21,892
	<i>City of Chatham</i>	126,243	126,244	252,487
Mattagami Valley	<i>Thamesville Telemark Gauge</i>	934	934	1,868
	<i>Town Creek</i>	15,657	15,587	31,244
Metropolitan Toronto and Region	<i>Private Lands</i>	5,000	5,000	10,000
	<i>Etobicoke &amp; Mains Creek</i>	10,050	10,050	20,100
	<i>Don River</i>	51,097	51,097	102,194
	<i>West Branch Don River</i>	22,920	22,920	45,840
	<i>Highland Creek</i>	26,645	25,731	52,376
	<i>Mimico Creek</i>	27,105	27,105	54,210
	<i>St. Lucie &amp; Troutbrook Dr.</i>	85,690	85,690	171,380
Moira River	<i>Marlbank Creek</i>	150	150	300
North Grey Region	<i>Beaver River</i>	459	458	917
	<i>Dunedin Creek</i>	240	239	479
	<i>Pottawatomie River</i>	115	115	230
Nottawasaga Valley	<i>Nottawasaga River Twp. of Essa</i>	29	29	58
	<i>Pretty River Town of Collingwood</i>	1,742	1,742	3,484
Otonabee Region	<i>Otonabee River Banks</i>	404	403	807
Saugeen Valley	<i>Pinkerton Flood Control</i>	636	500	1,136
Sydenham Valley	<i>Metcalf Township (Melchior)</i>	250	250	500
	<i>Sydenham River-Town of Wallaceburg</i>	47	47	94
	<i>Flood Control</i>	1,541	1,541	3,082
	<i>Sydenham River</i>	2,884	2,800	5,684
	<i>Wallaceburg</i>	14,173	14,172	28,345
	<i>Wallaceburg (Labadie)</i>			
	<i>Retaining Wall</i>	24	23	47
	<i>Wallaceburg (Lambton)</i>			
	<i>Loan Retaining Wall</i>	24	24	48
	<i>Wallaceburg (O'Brien)</i>			
	<i>Retaining Wall</i>	13	13	26
	<i>Wallaceburg (Southgate)</i>			
	<i>Retaining Wall</i>	25	25	50
Upper Thames River	<i>Springbank</i>	6,083	6,082	12,165
	<i>Medway River</i>	25,679	25,679	51,358
<b>TOTALS</b>		<b>\$479,343</b>	<b>\$478,817</b>	<b>\$958,160</b>





*Etobicoke Creek is diverted around Brampton by this concrete lining which also prevents streambank erosion.*

Wedgewood Diversion and Fourteen Mile Creek Channel Improvement at Oakville. The Morrison-Wedgewood Diversion will be completed early in the next fiscal year, while final plans have been prepared for the Fourteen Mile Creek Channel Improvement.

The Upper Thames River Conservation Authority completed the channel improvement on the Avon River at Stratford and continued with the property acquisitions for the Gordon Pittock Reservoir. Also, proposals for the final engineering of the Glengowan and Thamesford Dams and Reservoirs were requested from Consulting Engineers and it is expected that these studies will be initiated early in the next fiscal year.

Work on the flood control plan of the Metropolitan Toronto and Region Conservation Authority was confined chiefly to the purchase of reservoir lands in an effort to offset the rising land costs and urban expansion. The final engineering was completed for the High Finch Dam and detailed plans prepared for the relocation and pro-

tection of the utilities within the reservoir area. Also, the channel improvement work on the Don River at York Mills was completed and ready for the spring runoff.

The Grand River Conservation Authority's flood control and water conservation plan approved in principle by the Province a year ago was under review for resubmission to the Federal Government. In the meantime, the Province is assisting the Authority with the acquisition of key properties within the proposed reservoir areas as they become available.

Parkhill Dam and Reservoir under construction by the Ausable River Conservation Authority was essentially completed and proved its effectiveness as a flood control measure during the spring freshet. This project is being financed under the Federal/Provincial ARDA program. Other works completed during this period under the ARDA program included the Stoco Lake Dams on the Moira River and the engineering study of the Lower Thames River from Chatham to the outlet at Lake St. Clair.

### **C3C Water Control Projects**

#### **DAMS: CONSTRUCTION AND IMPROVEMENTS**

*Cost Sharing: Authority 50%/Ontario 50%*

AUTHORITY	PROJECT	AUTHORITY	PROVINCE	TOTAL
Metropolitan Toronto and Region	<i>Snelgrove Reservoir</i>	17,981	17,982	35,963
	<i>Arthur Percy Reservoir</i>	519	518	1,037
North Grey Region	<i>Owen Sound Mill Dam</i>	1,101	1,100	2,201
Sauble Valley	<i>Arran Lake</i>	16	47	63
Sault Ste. Marie Region	<i>Fort Creek</i>	127,468	127,468	254,936
<b>TOTALS</b>		<b>\$147,085</b>	<b>\$147,115</b>	<b>\$294,200</b>

#### C4A Water Control Project under E.M.R.

##### FEDERAL/PROVINCIAL/AUTHORITY AGREEMENTS

Cost Sharing: Authority 25%/Ontario 37½%/Canada 37½%

AUTHORITY	PROJECT	ENGINEERING	CONST'N	LAND ACQ.	MISC.	TOTAL	AUTHORITY	PROVINCE	FEDERAL
Halton Region	<i>Oakville</i>	229,892	1,055,618	40,900	17,444	1,343,854	342,537	503,945	497,372
Metropolitan	<i>Black Creek</i>			5,562	87	5,649	1,445	2,118	2,086
Toronto and	<i>Claireville</i>			441,360	4,984	446,344	113,455	167,379	165,510
Region	<i>Ebenezer Dam</i>			41,730		41,730	10,079	15,649	16,002
	<i>Lower Bolton</i>			124,572	2,322	126,894	32,668	47,585	46,641
	<i>Nashville</i>			208,326	4,542	212,868	54,934	79,825	78,109
	<i>King Creek</i>			842	16	858	221	321	316
	<i>Boyd</i>			583,461	11,145	594,606	152,831	222,977	218,798
	<i>Finch</i>	11,083		562,786	11,657	585,526	150,753	219,572	215,201
	<i>Willowdale</i>			274,966	5,135	280,101	71,951	105,038	103,112
	<i>York Mills Channel</i>	6,405	155,940		1,247	163,592	41,366	61,347	60,874
		17,488	155,940	2,243,605	41,135	2,458,168	629,703	921,811	906,659
Upper Thames	<i>Cedar Creek</i>	33,205			462	33,667	8,590	12,625	12,452
River	<i>Gordon Pittock</i>	19,791	cr. 25,792	81,646	7,883	83,528	23,998	31,323	28,207
	<i>Mitchell</i>		471	809		1,280	320	480	480
	<i>Stratford</i>	1,574	14,600	125	1,641	17,940	5,100	6,728	6,112
	<i>Wildwood</i>		53,027		1,913	54,940	14,452	20,603	19,885
		54,570	42,306	82,580	11,899	191,355	52,460	71,759	67,136
<b>TOTALS</b>		\$301,950	\$1,253,834	\$2,357,085	\$70,478	\$3,993,377	\$1,024,700	\$1,497,515	\$1,471,162

#### C4B Water Control Projects Under ARDA

##### FEDERAL/PROVINCIAL/AUTHORITY AGREEMENTS

Cost Sharing: Authority/Ontario/Canada

AUTHORITY	PROJECT	LAND ACQ.	ENGINEERING	CONST'N	TOTAL	AUTHORITY	PROVINCE	FEDERAL
Ausable River	<i>Parkhill Dam</i>	13,305		1,019,698	1,033,003	76,328	479,829	476,846
Lower Thames Valley	<i>Lower Thames River</i>		2,578		2,578	1,232	673	673
Moirs River	<i>Stoco and</i>							
	<i>Deerock Lakes</i>	2,152		28,956	31,108	3,110	13,999	13,999
<b>TOTALS</b>		\$15,457	\$2,578	\$1,048,654	\$1,066,689	\$80,670	\$494,501	\$491,518

#### SMALL RESERVOIR PROGRAM

In the field of water resources management the existing small reservoir program continued to engage the interest and activity of the majority of Conservation Authorities. This program has proven to be beneficial in helping to maintain ground-water levels and in augmenting stream-flow and rural water supplies during periods of low precipitation and flow.

The highlight of this year's program was the opening of the Milne Dam and Reservoir on the Rouge River at Markham on October 17. Constructed by the Metropolitan Toronto and Region Conservation Authority, this project will conserve water, assist in maintaining the streamflow and also provide much needed recreational facilities for the area.

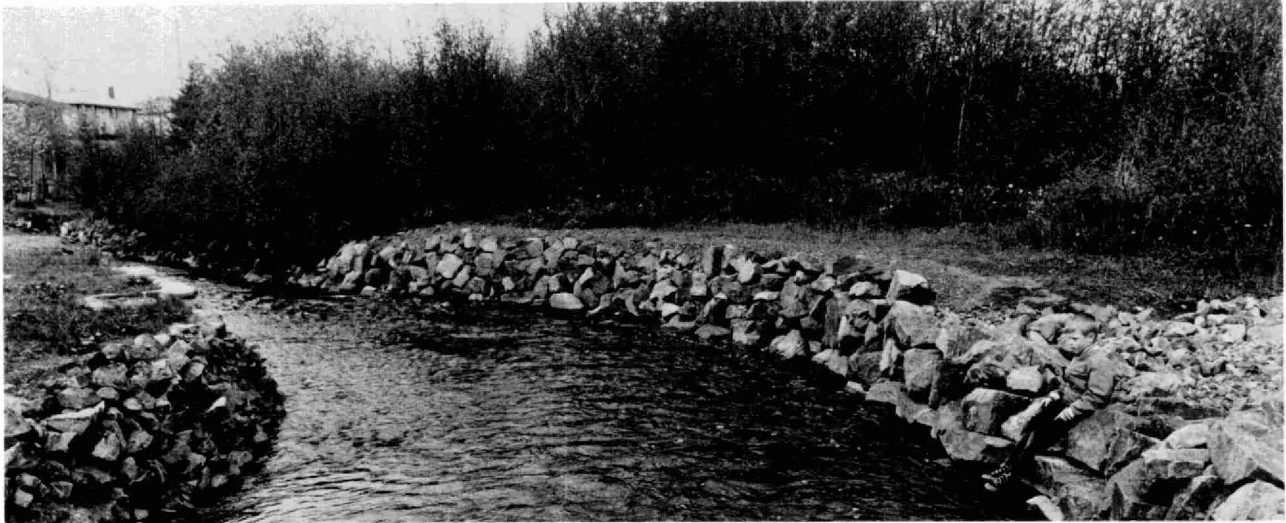
Four projects were completed during the year and 11 are currently under construction. In addition, there are ten projects in the final engineering stage and 35 projects for which preliminary engineering has either been completed or is under way.

#### CHANNEL IMPROVEMENTS

While generally considered to be inferior to storage reservoirs, channel improvements for the control of flooding and streambank erosion are often recommended for economic reasons and as an expedient. Such works include widening, deepening and re-alignment of the stream channels through critical areas.

Extensive channel improvement work was undertaken on the Neebing River and McVicar's Creek by the Lakehead





*Stone rip-rap protects the banks of McVicar's Creek in the Lakehead Region Conservation Authority.*

Region Conservation Authority. Also, several erosion control structures were completed on the Lower Thames and Sydenham Rivers by the respective Authorities.

There are eight streambank erosion control projects and three channel improvement works in various stages of construction and 14 other projects of this nature in the preliminary and/or final engineering stages.

#### **FLOOD PLAINS**

Mapping and flood plain land acquisition is being carried on extensively by several Authorities, particularly those with large urban centres where the expansion could result in the undesirable development of the low-lying lands adjacent to the stream channel.

Areas of most concern are those of the Metropolitan Toronto and Region, Grand River, Upper Thames River, Lower Thames Valley, Halton Region, Hamilton Region and Central Lake Ontario Conservation Authorities.

Indiscriminate use of flood plain land increases the probability of the loss of life and the amount of flood damage. Flood plain lands acquired by the Conservation Authorities are developed primarily for recreation and other uses compatible to periodic flooding.

#### **THE FLOOD WARNING SYSTEM**

In the interest of public safety and the efficient operation of flood control structures, this service is expanding continually and is available to all Conservation Authorities, government departments and other public and private agencies.

Regarding flood control, the installation of telemetering equipment, which permits river flow data to be relayed to the control centre by telephone, was most significant. Five of these installations are in service for critical areas and

during the current year plans were in progress to extend this system by the installation of four additional telemarks.

The Grand River Conservation Authority has for a number of years operated telemetering equipment as an aid in operating its flood control dams and is continuing to expand its system as the need arises.

The Inland Waters Branch, Canada Department of Energy, Mines and Resources, is assisting with the supply and installation of the instruments and it is expected that the system will be gradually extended over the years to meet the growing demand and need for this service.

The Metropolitan Toronto and Region Conservation Authority is continuing its pilot study on the Humber River to develop means of transmitting rainfall and stream-flow data automatically to a central operations office.

During the year an integrated plan for the operation of the dams on the Gananoque River in the Cataraqui Region Conservation Authority was developed. The object of this plan was to provide for the most effective use of the dams for the purpose of flood control, recreation, power generation, pollution abatement and wildlife management.

#### **MAINTENANCE AND OPERATION**

The policy of providing a 75 per cent grant towards the cost of operating and maintaining water control structures is a popular one with the Conservation Authorities and has proved its worth in ensuring that these structures are maintained in a safe and efficient working condition.

In 1968, the total of \$122,631.71 was paid to 25 Conservation Authorities for this purpose. In all, 75 water control structures were inspected and reports prepared by the Branch. Copies of the reports were forwarded to the respective Conservation Authorities for their information and action.

## C5 Authority Water Control Projects

### SMALL RESERVOIR PROGRAM *Cost Sharing: Authority 25%/Ontario 75%*

AUTHORITY	PROJECT	LAND	ENGINEERING	CONST'N	TOTAL	AUTHORITY	PROVINCE	FEDERAL
Ausable River	Lucan Dam		13,418		13,418	3,354	5,032	5,032
Big Creek Region	Deer Creek	3,054		239,462	242,516	60,630	91,743	90,143
Cataraqui Region	Buells Creek	5,933			5,933	1,917	2,007	2,009
	Little Cataraqui	44,389		2,850	47,239	11,810	17,719	17,710
	Millhaven Creek		1,032		1,032	258	387	387
	Temperance Lake	331			331	83	124	124
Catfish Creek	Springwater Dam			50,000	50,000	12,501	18,895	18,604
Central Lake Ontario	Enniskillen	924	300		1,224	306	459	459
	Upper Airport		20,359		20,359	5,122	7,619	7,618
Credit Valley	Fairy Lake			111,814	111,814	27,954	41,930	41,930
	Orangeville Dam	43,428		640,652	684,080	171,232	257,037	255,811
Crowe Valley	Allans Mill Dam		2,950		2,950	738	1,106	1,106
Grand River	Alder Creek		4,777		4,777	1,195	1,791	1,791
	Arthur		2,400		2,400	682	859	859
	Laurel Creek			9,325	9,325	2,331	3,497	3,497
	Mill Creek			11,685	11,685	2,921	4,390	4,374
	Nithburg		11,380		11,380	2,845	4,268	4,267
	Shades Mill	195,130		23,460	218,590	54,647	84,270	79,673
	Upper Floradale	166,489		48,172	214,661	53,665	80,953	80,043
	Victoria Mills	6,069		4,345	10,414	2,604	3,937	3,873
Halton Region	Hilton Falls	18,115			18,115	4,529	6,793	6,793
	Mountsberg			3,069	3,069	767	1,151	1,151
Hamilton Region	Christie Dam	139,691	22,053		161,744	40,436	60,690	60,618
	Greensville		1,450		1,450	475	487	488
	Valens			479	479	120	179	180
Holland Valley	Rogers	141		47,782	47,923	11,981	18,004	17,938
	Scanlon Creek		2,213		2,213	553	830	830
Junction Creek	Frood Dam			95	95	24	35	36
	Maley	89,613		8,872	98,485	24,621	36,932	36,932
	Nepahwin River			21,442	21,442	6,257	7,592	7,593
	Nickeldale			152	152	38	57	57
	Perch Lake	643		5,529	6,172	1,543	2,315	2,314
	South East Shore	89,023		7,830	96,853	24,213	36,320	36,320
Lower Thames Valley	Sharon Creek	23,517		77,856	101,373	25,343	38,015	38,015
Maitland Valley	Lower Wingham			53,226	53,226	13,306	19,960	19,960
Metropolitan Toronto and Region	Milne			187,008	187,008	46,752	70,128	70,128
	Stouffville	102,295		46,500	148,795	41,785	54,387	52,623
Moira River	Lower Moira			21,417	21,417	5,355	8,031	8,031
Napanee Region	Arden Dams	3,079		550	3,629	911	1,359	1,359
	Colebrook Dam			75	75	23	26	26
	Hardwood			48	48	12	18	18
	Laraby		585		585	147	219	219
	Third Depot			27,066	26,066	6,767	17,396	2,903
	Varty Lake		328		328	82	123	123
Niagara Peninsula	Binbrook	272,369			272,369	68,589	101,890	101,890
	15-16 Mile Ponds		572		572	143	429	
	Oswego	2,551			2,551	638	956	957
	Smithville							
	Stevensville	33,386		320	33,706	8,596	20,959	4,151
	Virgil	9,871		7,911	17,782	4,445	8,116	5,221
	Welland River Weir			275	275	69	206	

**C5 Authority Water Control Projects continued**

AUTHORITY	PROJECT	LAND	ENGINEERING	CONST'N	TOTAL	AUTHORITY	PROVINCE	FEDERAL
Nottawasaga Valley	Utopia	24,972		185,535	210,507	52,628	79,850	78,029
Otonabee Region	Hope Dam		1,375		1,375	344	515	516
Otter Creek	Delmer Dam		2,291		2,291	573	859	859
Prince Edward Region	Baldwin		755		755	189	283	283
	Consecon		3,693	15,816	19,509	4,877	7,316	7,316
Raisin Region	Chanel Dev.			4,497	4,497	1,124	1,687	1,686
Rideau Valley	Bellamy			8,562	8,562	2,141	3,211	3,210
	Tay River			26,829	26,829	6,707	10,061	10,061
Sauble Valley	Arran Lake			205	205	51	154	
	Skinner Marsh			12,796	12,796	3,508	4,644	4,644
Saugeen Valley	Durham			227	227	57	85	85
South Nation River	Russell			2,149	2,149	537	806	806
Sydenham Valley	Alvinston			9,229	9,229	2,307	3,461	3,461
	Campbell Dam			3,985	3,985	1,015	1,485	1,485
	Coldstream	5,701	1,372	4,509	11,582	2,949	4,317	4,316
	Head Street	867		24,243	25,110	6,278	9,416	9,416
	Petrolia			12,230	12,230	3,333	6,878	2,019
Upper Thames River	Springbank			446,254	446,254	111,564	168,183	166,507
	Zorra Swamp		11,384		11,384	2,846	4,269	4,269
Whitson Valley	Chelmsford	3,012		20,127	23,139	9,905	6,767	6,467
<b>TOTALS</b>		<b>\$1,284,593</b>	<b>\$104,687</b>	<b>\$2,436,460</b>	<b>\$3,825,740</b>	<b>\$968,248</b>	<b>\$1,455,873</b>	<b>\$1,401,619</b>

**C6 Municipal Water Control Projects**

**SMALL RESERVOIR PROGRAM** Cost Sharing: Municipality 25%/Ontario 75%

PARTICULARS	PROJECT	PRELIMINARY ENGI-NEERING		CONST'N	TOTAL	MUNICIPALITY	PROVINCE	FEDERAL
		LAND ACQ.						
Alexandria Town	Loch Garry Dam			13,678	13,678	3,419	10,259	
Osnabruck Twp.	Osnabruck			3,598	3,598	1,273	1,163	1,162
Renfrew County	Killaloe Reservoir			24,243	24,243	6,061	9,091	9,091
Renfrew County	Pembroke, Beachburg and Jeffrey Lake Dams	3,400	4,135	216,904	224,439	56,110	84,944	83,385
<b>TOTALS</b>		<b>\$3,400</b>	<b>\$4,135</b>	<b>\$258,423</b>	<b>\$265,958</b>	<b>\$66,863</b>	<b>\$105,457</b>	<b>\$93,638</b>

**C7 Water Control Projects**
**PRELIMINARY ENGINEERING: FLOOD PLAIN MAPPING AND MISCELLANEOUS**

Cost Sharing: Authority 25%/Ontario 75%

AUTHORITY	PROJECT	AUTHORITY	PROVINCE	TOTAL
Ausable River	Ailsa Craig Village	150	450	600
	Grand Bend	1,025	3,076	4,101
	Greater Old River Bed	2,350	7,050	9,400
	Hibbert Dam & Reservoir	122	368	490
Big Creek Region	Mud Creek Dam	305	915	1,220
Credit Valley	Erindale	625	1,875	2,500
	Silver & Black Creeks	2,375	7,125	9,500
Ganaraska Region	Ganaraska River	175	525	700
Grand River	Chicopee Dam	588	1,763	2,351
	Grand River Watershed	202	605	807
	Grand River			
	Tutela Heights & Ononadaga	1,817	5,453	7,270
	Hanlon's Creek	2,125	6,375	8,500
	Lower Grand River Watershed	2,481	7,444	9,925
	Lower Whiteman's Creek	300	900	1,200

continued

**C7 Water Control Projects *continued***

Grand River	<i>Lower Laurel Creek</i>	675	2,025	2,700
	<i>Nith River—Town of New Hamburg</i>	125	375	500
	<i>Nith &amp; Conestogo Rivers</i>	5,708	17,124	22,832
	<i>Roger's Creek</i>	737	1,500	2,237
	<i>Hanlon's Creek</i>	475	1,425	1,900
Halton Region	<i>West Luther Watershed</i>	1,025	2,371	3,396
	<i>Montrose Dam</i>	1,406	3,600	5,006
	<i>Grindstone Creek</i>	7,659	13,228	20,887
	<i>Hager-Rambo Creek</i>	1,001	3,003	4,004
		10,738	32,215	42,953
Hamilton Region	<i>Joshua Creek</i>	941	2,824	3,765
	<i>Redhill Creek</i>	1,231	2,250	3,481
Junction Creek	<i>Vicinity Hamilton City</i>	421	422	843
	<i>Authority Watershed</i>	110	331	441
	<i>Updating Watershed Report</i>	1,188	3,565	4,753
Lakehead Region	<i>McIntyre River Dam &amp; Reservoir</i>	272	750	1,022
	<i>Neebing River</i>	542	1,625	2,167
Lower Thames Valley	<i>City of Chatham</i>	425	1,275	1,700
	<i>McGregor Creek</i>	469	1,406	1,875
	<i>Thames River</i>	2,455	7,365	9,820
Maitland Valley	<i>McGregor Creek</i>	47	140	187
	<i>Maitland River</i>	534	1,601	2,135
	<i>Etobicoke Creek</i>	2,071	6,214	8,285
	<i>Etobicoke Creek Township of Chinguacousy</i>	688	2,063	2,751
	<i>Highland Creek Valley</i>	712	2,137	2,849
Metropolitan Toronto and Region	<i>Humber River</i>	810	2,430	3,240
	<i>Massey Creek Valley</i>	1,950	5,852	7,802
	<i>Mimico Creek</i>	3,127	9,380	12,507
	<i>Pilot System</i>	4,786	12,596	17,382
	<i>Boyne River—Town of Alliston</i>	327	979	1,306
Nottawasaga Valley	<i>Nottawasaga River—Essa Township</i>	496	1,489	1,985
	<i>South Collingwood Flood Control</i>	1,258	3,773	5,031
	<i>Lang Mill Dam</i>	350	1,050	1,400
Otonabee Region	<i>Raisin River</i>	2,500	7,500	10,000
Rideau Valley	<i>Jock River</i>	3,000	9,000	12,000
Saugeen Valley	<i>Saugeen River</i>	721	2,163	2,884
Sault Ste. Marie Region	<i>Clark Creek</i>	800	2,399	3,199
Sydenham Valley	<i>Bear Creek</i>	464	86	550
	<i>Chatham Township (Keith)</i>	169	506	675
	<i>Wallaceburg (Warwick) Wall</i>	125	375	500
Upper Thames River	<i>Cedar Creek &amp; South Thames River</i>	193	579	772
	<i>Medway Creek</i>	4,299	12,896	17,195
<b>TOTALS</b>		<b>\$81,670</b>	<b>\$227,811</b>	<b>\$309,481</b>

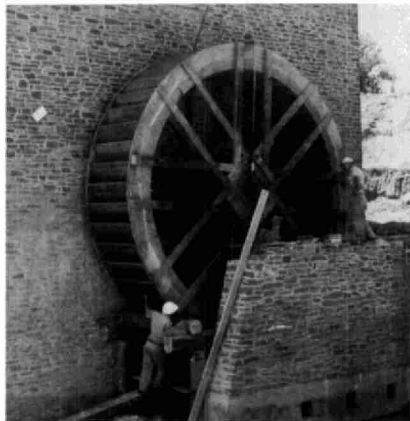
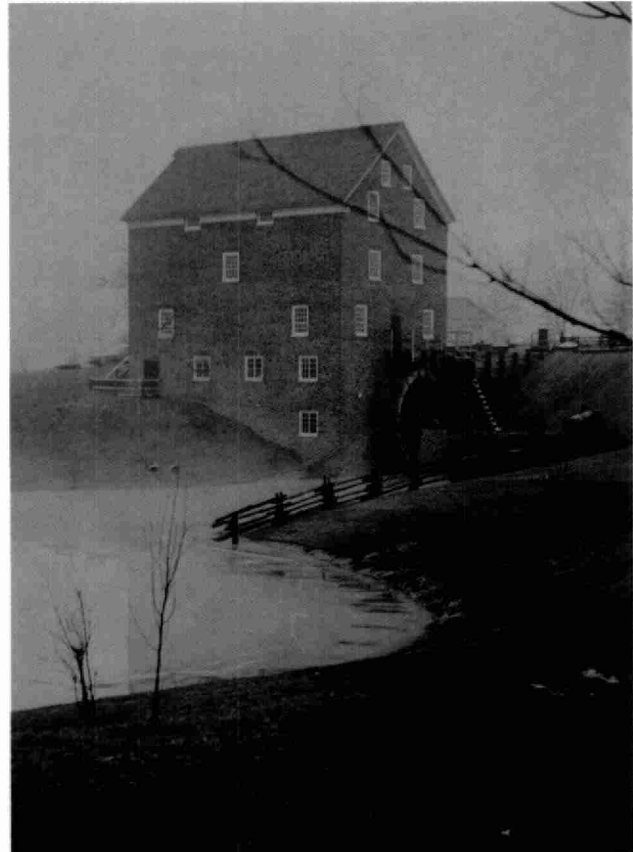
**C8 Flood Warning System**

*Cost Sharing: Authority 50%/Ontario 50%*

AUTHORITY	PROJECT	AUTHORITY	PROVINCE	TOTAL
Grand River	<i>Flood Control System</i>	1,732	1,732	3,464
Grand River	<i>Grand River Basin</i>	410	1,231	1,641
Grand River	<i>Middle Grand River Area</i>	2,259	2,259	4,518
Hamilton Region	<i>Automatic Rain Gauge—Valens</i>	77	77	154
Junction Creek	<i>Updating Watershed Report</i>	711	2,080	2,791
Napanee Region	<i>Carman Creek</i>	50	50	100
Saugeen Valley	<i>Saugeen River</i>	481	480	961
Upper Thames River	<i>Telemetry Stations</i>	50	50	100
<b>TOTALS</b>		<b>\$5,770</b>	<b>\$7,959</b>	<b>\$13,729</b>



*Kelso Lake is popular in the Halton Region*



*Roblin's Mill in Black Creek Pioneer Village has an old oak wheel installed.*



*Part of the Grand River Conservation Authority's land use program is contour tree planting to reduce erosion and trap water.*

Recommendations resulting from the survey and report for the Raisin Region Conservation Authority in eastern Ontario, increased the area within the Conservation Authorities of Ontario, recommended for forest management, by 17,423 acres.

Forestry practices in Authorities serve several functions—the protection of source water areas, erosion control, the rehabilitation of marginal land, the growing of timber, and the preservation of natural timber-growing potential, and as a natural aid to flood control schemes. Trees planted under Authority auspices serve as windbreaks and shelter belts for farms, and they are also used for landscaping and screening in conservation areas.

Authority forests may consist of both natural and planted forest areas and, as recommended in conservation reports, frequently function as major conservation schemes on marginal land.

#### **Authority Forest Projects**

Most forests owned by Authorities are placed under agreement with the Department of Lands and Forests for management purposes and these are called Agreement Forests. Other forests not placed under agreement are called Authority Forests. By the end of the fiscal year the area actually purchased for these purposes had increased by almost three per cent. These purchases were mainly

made in the Saugeen, Sauble and North Grey Authorities. ARDA funds were used by seven Authorities to buy lands for these purposes, a considerable increase in this method of land purchase over the previous year.

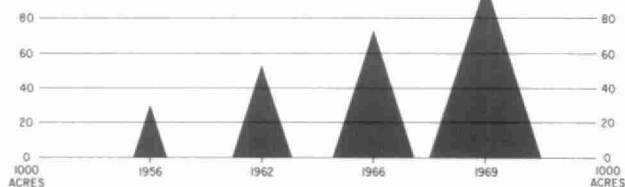
In the 1967-68 fiscal year, the practice, by some Authorities, of purchasing lands for special forest management works of their own, showed some increases. During the past fiscal year, this trend continued through limited purchases of new acreage (210 acres) and by the shifting of other types of Authority lands into forestry schemes.

As shown by the experience of previous years, the planting of trees is frequently most necessary on small tracts of privately-owned lands. These can have a major effect on larger scale conservation projects covering larger areas. The forestry programs of a number of agencies show that the popularity of this type of scheme continues. Fifteen Authorities, under a variety of private lands assistance programs, assisted in the planting of 910,785 trees on such areas. Almost an equal number (864,318) were planted on lands owned by 13 Authorities in the last fiscal year. In addition, one Authority, the Grand, continued its program of planting windbreaks in small watersheds devoted to specialized agriculture.

Woodlot management on Authority lands continues to be important, as the ownership of naturally wooded



## C9 Acquisition of Forest Lands



*A first taste of maple sap at Bruce's Mill Conservation Area.*

areas by Authorities has gradually accumulated over a period of years. This is particularly the case for the Grand River Conservation Authority, which now operates the large forest formerly operated by the Grand River Commission. Within this area, a normal forest management program is carried on each year by the Authority's staff. In addition, two Authorities continued programs of removing elm trees infected by Dutch elm disease. Otonabee Conservation Authority continued to employ its own staff, during the off-season, by conducting pulpwood and saw-log cutting operations within its own woodlands.

In soil and land use programs, Authorities focussed their attention on agricultural areas and their residents, and on certain basic functions, some of which are peculiar to certain regions due to the topography and physical make-up. Field tile subsidies therefore are important to some Authorities that have agricultural lands with drainage problems. In this fiscal year, four Conservation Authorities—South Nation, Metropolitan Toronto and Region, Cataraqui Region and Otonabee Region—supported the installation of over half a million tiles.

Assistance in the establishment of grass waterways for both surface drainage and erosion control, has fallen off during the last year. Local response and use of this program was confined to the Grand River Conservation

## C10 Conservation Authority Forest Acreage

	ACREAGE PURCHASED 1968/69 FISCAL YEAR	TOTAL ACREAGE MARCH 31/69
Ausable River		4,396
Big Creek Region	67	3,682
Catfish Creek		627
Central Lake Ontario		295
Crowe Valley		200
Ganaraska Region	100	8,736
Grand River		5,768
Hamilton Region		12
Lakehead Region		1,825
Lower Thames Valley		308
Maitland Valley		949
Metropolitan Toronto and Region		1,673
Moirs River	545	16,517
Napanee Region		6,749
Niagara Peninsula		186
North Grey Region	100	6,948
Otonabee Region	100	1,545
Otter Creek		1,517
Sauble Valley	810	3,818
Saugeen Valley	250	12,312
South Nation River	330	1,711
Sydenham Valley		150
Upper Thames River		3,359
<b>TOTALS</b>	<b>2,302</b>	<b>83,283</b>

Authority during this period. Continued use of such waterways in Authority demonstration projects, was part of the Land Use program of the Ausable River and the Grand River Conservation Authorities.

Additional demonstration projects of various improved land use practices were continued during the year by six Authorities.

AUTHORITY	DEMONSTRATION PROJECT	NUMBER
Ausable	Grass Waterway	2
	Gully Erosion Control	1
	Streambank Erosion Control	3
Grand	Grass Waterway	1
	Gully Erosion Control	1
	Demonstration Pasture	1
	Soil Management	1
Metropolitan Toronto and Region	Streambank Erosion Control	5
	Contour Tillage	1
	Gravel Pit Restoration	1
Otonabee	Streambank Erosion Control	1
Saugeen	Community Pasture	1
Sydenham	Gully Erosion Control	2
	Streambank Erosion Control	8
	Demonstration Pastures	2

The Maitland Valley Conservation Authority also continued a unique program, the construction of two more "hillside trickle" installations designed to improve water conservation and use on individual livestock-producing farms within its area.



*Casting for brook trout in a well-stocked pond at the Saugeen Valley Authority's headquarters at Walkerton.*

Programs for fish and wildlife management were carried out by many Conservation Authorities in 1968. Such programs serve a number of purposes: They may create or restore a sound ecological balance; they increase the opportunities for the pleasures of hunting, fishing and observation of wildlife and they ensure that in the future there will be the greatest possible numbers and variety of birds, mammals and other wildlife.

During 1968, 12 Conservation Authorities stocked streams or ponds with fish, in co-operation with the Department of Lands and Forests. Maskinonge were stocked in the Otonabee Region Conservation Authority's Lang Mill pond on the Indian River. Brook trout were stocked by the following Authorities: Credit Valley, Ganaraska, Halton Region, Hamilton Region, Metropolitan Toronto and Region, Niagara Peninsula, North Grey Region and Saugeen Valley. Bass were stocked in ponds by the Niagara Peninsula and Grand River Conservation Authorities. Rainbow trout were introduced by the Niagara and Sydenham Conservation Authorities. The Metropolitan Toronto

and Region Conservation Authority operated its own fish hatchery. A fish census of Lake Conestogo was carried out by the Grand River Conservation Authority.

The Nottawasaga Conservation Authority incorporated a fish ladder of improved design in its new Utopia Dam, for the use of rainbow trout. Three-quarters of a mile of the Mad River, which provides exceptional trout fishing, were acquired by the Nottawasaga Valley Conservation Authority and opened for the first time for public fishing.

In all, ten Conservation Authorities acquired streams or lakes suitable for fishing in 1968. These included the following Conservation Authorities: Grand River, Halton Region (three areas, including Crawford Lake), Hamilton Region (part of Spencer Creek), Maitland, Metropolitan Toronto and Region (the Goodwood Area), Napanee Region, Niagara Peninsula, North Grey Region, the Nottawasaga Valley, which acquired three areas in addition to the Mad River, and the Sydenham Valley. Streambank improvements for fish were carried out by the Grand River, Maitland and Otonabee Region Authorities.



On the subject of wetlands, the most noteworthy action was the establishment of a committee with representatives of the Grand River Conservation Authority and of the Department of Lands and Forests to improve the vast Luther Marsh for waterfowl purposes, including hunting, but with the proviso that the primary purpose of the Luther Reservoir remains flood control and the increase of summer flow of the Grand River. The Grand River Authority grew over 200,000 shrubs for wildlife. Wetlands were also established, acquired or enlarged by the following other Authorities: Cataraqui Region, Credit Valley (Orangeville Reservoir), Hamilton Region (part of Beverly Swamp), Holland Valley, North Grey Region, Nottawasaga Valley, Otonabee Region (Cavan Bog), Rideau Valley (Perth sewage lagoons), and Sydenham Valley (Campbell Reservoir and two others).

Nesting boxes for waterfowl, particularly Wood Ducks, were set up by the following Authorities: Halton Region, Hamilton Region, Moira River, Niagara Peninsula, North Grey Region and Otonabee Region. Successful nesting was reported at more than 50 per cent of the boxes put out by the Otonabee Conservation Authority.

The new controlled waterfowl hunting program at the Valens Reservoir was a success in 1968. A part of the reservoir where hunting is not carried out was baited repeatedly and successfully to attract waterfowl.

Planting of shrubs for wildlife was carried out by eight Conservation Authorities. In addition, roadside planting for combined wildlife and scenic values was carried out by the Otonabee Region Conservation Authority in Douro Township. The Holland Valley Authority established a new nursery for shrub production.

Wildlife refuges were established by 13 Conservation Authorities. However, the Hamilton Region Conserva-



*A junior conservationist netting fish in the Humber River.*

tion Authority allows hunting in one form or another in all areas controlled by the Authority.

An extensive aquatic weed control program was carried out by the Rideau Valley Authority in 1968. This may improve conditions for bass and pickerel fishing where algae are no longer a pest.

The Halton Region Conservation Authority raised and distributed 1,500 pheasants and 500 Chukar Partridges at its game farm at Mountsberg.

Twenty-three Conservation Authorities either took water samples to be tested by the Ontario Water Resources Commission, or reported pollution affecting fish or wildlife.

Nine Conservation Authorities carried out winter bird feeding programs. Natural history displays were organized and carried out by the Big Creek Region, Catfish Creek, Metropolitan Toronto and Region, Niagara Peninsula and Sydenham Valley Authorities.

## C11 Conservation Areas Expenditures

*Provincial Grant 50%*

CONSERVATION AUTHORITY	CONSERVATION AREA	LAND ACQUISITION			DEVELOPMENT			TOTALS		
		AUTH.	PROV.	TOTAL	AUTH.	PROV.	TOTAL	AUTH.	PROV.	TOTAL
Ausable River	<i>Parkhill</i>				21,316	21,294	42,610	21,316	21,294	42,610
	<i>Sundry</i>				963	963	1,926	963	963	1,926
Big Creek	<i>Backus</i>				846	800	1,646	846	800	1,646
	<i>Black Creek</i>				44	43	87	44	43	87
	<i>Hay Creek</i>				5,924	5,881	11,805	5,924	5,881	11,805
	<i>Norfolk</i>				328	328	656	328	328	656
Cataraqui Region	<i>Rowan Mills</i>				170	171	341	170	171	341
	<i>Waterford</i>				693	693	1,386	693	693	1,386
	<i>Buells Creek</i>				1,398	1,398	2,796	1,398	1,398	2,796
	<i>Charleston Lake</i>				260	260	520	260	260	520
	<i>Cronk Lake</i>				89	90	179	89	90	179
	<i>Gould Lake</i>				455	456	911	455	456	911
	<i>Hay Bay</i>	1,140	1,140	2,280	118	118	236	1,258	1,258	2,516

*continued next page*

C11 Conservation Areas Expenditures 1968/69 *continued*

CONSERVATION AUTHORITY	CONSERVATION AREA	LAND ACQUISITION			DEVELOPMENT			TOTALS		
		AUTH.	PROV.	TOTAL	AUTH.	PROV.	TOTAL	AUTH.	PROV.	TOTAL
Catfish Creek Central Lake	<i>Little Cataraqui</i>	42,031	42,031	84,062	1,036	1,036	2,072	43,067	43,067	86,134
	<i>Loughborough</i>	81	81	162	649	365	1,014	730	446	1,176
	<i>Sydenham Lake</i>	1,230	1,057	2,287	57	56	113	1,287	1,113	2,400
	<i>Springwater</i>				2,602	2,602	5,204	2,602	2,602	5,204
	<i>Enniskillen</i>				2,189	2,295	4,484	2,189	2,295	4,484
Ontario	<i>Harmony</i>				759	758	1,517	759	758	1,517
	<i>Heber Down</i>	366	366	732	140	141	281	506	507	1,013
	<i>LaSalle</i>	52,662	52,662	105,324				52,662	52,662	105,324
Credit Valley	<i>Long Sault</i>				921	921	1,842	921	921	1,842
	<i>Belfountain</i>	543	543	1,086	8,346	8,345	16,691	8,889	8,888	17,777
Ganaraska Region	<i>Forest</i>				33	32	65	33	32	65
	<i>Hillsburg</i>				5,286	5,286	10,572	5,286	5,286	10,572
	<i>Meadowvale</i>				1,246	1,123	2,369	1,246	1,123	2,369
	<i>Monora</i>				858	858	1,716	858	858	1,716
	<i>Orangeville</i>				1,658	1,075	2,733	1,658	1,075	2,733
	<i>Terra Cotta</i>	7,635	7,635	15,270	12,690	9,510	22,200	20,325	17,145	37,470
	<i>Garden Hill</i>				150	150	300	150	150	300
	<i>Port Hope</i>				44	45	89	44	45	89
	<i>Authority Office</i>				1,216	1,215	2,431	1,216	1,215	2,431
	<i>Bannister-Wrigley</i>				489	489	978	489	489	978
Grand River	<i>Belwood Lake</i>	1,500	1,500	3,000	8,406	8,407	16,813	9,906	9,907	19,813
	<i>Belwood &amp; Luther</i>				2,143	2,143	4,286	2,143	2,143	4,286
	<i>Blenheim Bends</i>				444	445	889	444	445	889
	<i>Byng</i>	13,306	13,306	26,612	8,389	8,388	16,777	21,695	21,694	43,389
	<i>Chicopee Hills</i>				91,131	91,131	182,262	91,131	91,131	182,262
	<i>Conestogo</i>				25,685	25,686	51,371	25,685	25,686	51,371
	<i>F.W.R. Dickson</i>				222	222	444	222	222	444
	<i>Doon</i>				362	363	725	362	363	725
	<i>Elora</i>				42,882	42,882	85,764	42,882	42,882	85,764
	<i>Everton</i>				8,052	8,052	16,104	8,052	8,052	16,104
	<i>Glennie</i>				1,020	1,019	2,039	1,020	1,019	2,039
	<i>Grand Valley</i>	10,175	10,175	20,350	3,481	3,482	6,963	13,656	13,657	27,313
	<i>Kitchener-</i>									
	<i>Waterloo</i>	21,647	21,646	43,293				21,647	21,646	43,293
	<i>Laurel Creek</i>				33,282	33,283	66,565	33,282	33,283	66,565
	<i>Luther</i>				4,794	4,793	9,587	4,794	4,793	9,587
	<i>Nith</i>				748	748	1,496	748	748	1,496
	<i>Parkin</i>				245	244	489	245	244	489
	<i>Pinehurst</i>				15,815	15,814	31,629	15,815	15,814	31,629
	<i>Puslinch</i>	16,599	16,599	33,198	1,154	1,154	2,308	17,753	17,753	35,506
	<i>Rockwood</i>	10,975	10,865	21,840	5,339	5,339	10,678	16,314	16,204	32,518
	<i>W. J. Scott</i>				827	827	1,654	827	827	1,654
	<i>Silver Creek</i>				668	668	1,336	668	668	1,336
	<i>Taquanyah</i>				3,771	3,771	7,542	3,771	3,771	7,542
	<i>Tutton Creek</i>				5,220	3,100	8,320	5,220	3,100	8,320
	<i>West Luther</i>				11	11	22	11	11	22
	<i>Authority Forest</i>				1,780	1,779	3,559	1,780	1,779	3,559
	<i>Burns Nature</i>				164	165	329	164	165	329
	<i>Campbellville</i>	205	205	410	18	17	35	223	222	445
	<i>Carlisle</i>				2,832	2,831	5,663	2,832	2,831	5,663
Halton Region	<i>Esquesing</i>				366	367	733	366	367	733
	<i>Kelso</i>				25,727	18,739	44,466	25,727	18,739	44,466
	<i>Mount Nemo</i>	7,511	7,511	15,022	95	95	190	7,606	7,606	15,212
	<i>Mountsberg</i>				11,254	11,254	22,508	11,254	11,254	22,508

**C11 Conservation Areas Expenditures 1968/69** *continued*

CONSERVATION AUTHORITY	CONSERVATION AREA	LAND ACQUISITION			DEVELOPMENT			TOTALS		
		AUTH.	PROV.	TOTAL	AUTH.	PROV.	TOTAL	AUTH.	PROV.	TOTAL
Hamilton Region	<i>Rattlesnake Point</i>				2,989	2,988	5,977	2,989	2,988	5,977
	<i>Sixteen Valley</i>				231	231	462	231	231	462
	<i>Authority Office</i>				1,089	1,089	2,178	1,089	1,089	2,178
	<i>Ancaster- Dundas</i>	43,528	43,517	87,045	1,073	1,073	2,146	44,601	44,590	89,191
	<i>Beverly Swamp</i>	3,343	3,343	6,686				3,343	3,343	6,686
Holland Valley	<i>Crooks Hollow</i>				212	213	425	212	213	425
	<i>Spencer Gorge</i>	11,775	11,775	23,550	1,286	1,286	2,572	13,061	13,061	26,122
	<i>Tiffany Falls</i>	5,294	5,294	10,588				5,294	5,294	10,588
	<i>Valens</i>				41,638	41,638	83,276	41,638	41,638	83,276
	<i>Bradford</i>				1,690	1,682	3,372	1,690	1,682	3,372
Junction Creek	<i>Scanlon Creek</i>	468	467	935	12,313	12,313	24,626	12,781	12,780	25,561
	<i>Sundry</i>				852	853	1,705	852	853	1,705
	<i>Garson</i>				1,040	1,040	2,080	1,040	1,040	2,080
	<i>Lake Laurentian</i>				1,043	1,044	2,087	1,043	1,044	2,087
	<i>Minnow Lake</i>				1,000	1,000	2,000	1,000	1,000	2,000
Lakehead Region	<i>New Sudbury</i>				143	143	286	143	143	286
	<i>Tree Planting</i>				957	957	1,914	957	957	1,914
	<i>Hurkett Cove</i>				25	25	50	25	25	50
	<i>Highway 401</i>				398	398	796	398	398	796
	<i>Big Bend</i>				165	165	330	165	165	330
Lower Thames	<i>Thames Grove</i>				5,680	5,680	11,360	5,680	5,680	11,360
	<i>Delaware</i>				29	29	58	29	29	58
	<i>Harwich</i>	83	83	166	355	354	709	438	437	875
	<i>Longwoods Rd.</i>	82	82	164	210	210	420	292	292	584
	<i>Falls Reserve</i>				15,786	15,787	31,573	15,786	15,787	31,573
Maitland Valley	<i>Harriston-Minto</i>				1,700	1,700	3,400	1,700	1,700	3,400
	<i>Wroxeter</i>				171	170	341	171	170	341
	<i>Albion Hills</i>	32,483	32,483	64,966	20,143	20,143	40,286	52,626	52,626	105,252
	<i>Black Creek</i>				22,908	22,907	45,815	22,908	22,907	45,815
	<i>Bolton</i>				4,012	4,000	8,012	4,012	4,000	8,012
Metropolitan Toronto and Region	<i>Boyd</i>				19,078	19,078	38,156	19,078	19,078	38,156
	<i>Bruce's Mills</i>				17,567	17,567	35,134	17,567	17,567	35,134
	<i>Clairemont</i>				2,789	2,789	5,578	2,789	2,789	5,578
	<i>Clareville</i>	25,187	25,186	50,373	100,080	100,080	200,160	125,267	125,266	250,533
	<i>Cold Creek</i>				38,502	38,502	77,004	38,502	38,502	77,004
	<i>Ebenezer</i>				53	53	106	53	53	106
	<i>Glen Haffey</i>				14,171	14,171	28,342	14,171	14,171	28,342
	<i>Glen Major</i>	9,533	9,033	18,566	1,431	1,431	2,862	10,964	10,464	21,428
	<i>Goodwood</i>				1,075	1,075	2,150	1,075	1,075	2,150
	<i>Greenwood</i>				5,111	5,111	10,222	5,111	5,111	10,222
	<i>Heart Lake</i>				21,086	21,085	42,171	21,086	21,085	42,171
	<i>Humber Trails</i>				823	722	1,545	823	722	1,545
	<i>King Creek</i>				35	35	70	35	35	70
	<i>Lake St. George</i>	50,470	50,470	100,940	704	704	1,408	51,174	51,174	102,348
	<i>Lower Rouge</i>				14,812	14,812	29,624	14,812	14,812	29,624
	<i>McMichael</i>					116,521	116,521		116,521	116,521
	<i>Milne</i>				4,089	4,089	8,178	4,089	4,089	8,178
	<i>Nashville</i>				681	682	1,363	681	682	1,363
	<i>Palgrave</i>				724	725	1,449	724	725	1,449
	<i>Petticoat Creek</i>				114	114	228	114	114	228
	<i>Pickering</i>				35	35	70	35	35	70
	<i>Stouffville</i>				70	71	141	70	71	141
	<i>Woodbridge</i>				799	800	1,599	799	800	1,599

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**C11 Conservation Areas Expenditures 1968/69**

CONSERVATION AUTHORITY	CONSERVATION AREA	LAND ACQUISITION			DEVELOPMENT			TOTALS		
		AUTH.	PROV.	TOTAL	AUTH.	PROV.	TOTAL	AUTH.	PROV.	TOTAL
Moir River	O'Hara Mill				41	41	82	41	41	82
	Colonel Roscoe									
	Vanderwater	662	663	1,325	614	614	1,228	1,276	1,277	2,553
Napane Region	Sundry				16	16	32	16	16	32
	Authority Office				331	331	662	331	331	662
	Newburgh Park	202	203	405				202	203	405
	Second Depot									
Niagara Peninsula	Lake				137	137	274	137	137	274
	Ball's Falls				1,810	1,597	3,407	1,810	1,597	3,407
	Beamer Memorial	4,297	4,298	8,595				4,297	4,298	8,595
	Chippawa Creek				1,786	1,694	3,480	1,786	1,694	3,480
	Hedley Forest				391	391	782	391	391	782
North Grey Region	Long Beach				1,606	1,606	3,212	1,606	1,606	3,212
	St. John's				370	371	741	370	371	741
	Willoughby Marsh	200	200	400	1,197	1,182	2,379	1,397	1,382	2,779
	Ainslie Wood				255	256	511	255	256	511
	Beaver Valley	2,423	2,423	4,846				2,423	2,423	4,846
Nottawasaga Valley	Eugenia Falls				252	252	504	252	252	504
	Inglis Falls	34,709	34,709	69,418	662	600	1,262	35,371	35,309	70,680
	Meaford				853	853	1,706	853	853	1,706
	Alliston				1,480	1,100	2,580	1,480	1,100	2,580
	Carruthers									
Otonabee Region	Memorial				1,916	1,915	3,831	1,916	1,915	3,831
	Edenvale				136	136	272	136	136	272
	New Lowell				1,782	1,782	3,564	1,782	1,782	3,564
	D.A. Tiffin	157	156	313				157	156	313
	Tottenham Pond				769	768	1,537	769	768	1,537
Otonabee Region	Authority Office				76	76	152	76	76	152
	Cavan Swamp	2,482	2,482	4,964	26	25	51	2,508	2,507	5,015
	Heber Rogers				50	50	100	50	50	100
	Lang Mill				62	62	124	62	62	124
	Squirrel Creek	2,431	1,769	4,200	1,912	1,912	3,824	4,343	3,681	8,024
Otter Creek	Warsaw Caves				826	825	1,651	826	825	1,651
	Whitfield				1,534	1,535	3,069	1,534	1,535	3,069
	Norwich				755	755	1,510	755	755	1,510
	Port Burwell				137	136	273	137	136	273
	Forest	512	511	1,023				512	511	1,023
Raisin Region	Authority Office				702	703	1,405	702	703	1,405
	Mill Bay				4,099	4,100	8,199	4,099	4,100	8,199
Sauble Valley	Colpoy Range				127	126	253	127	126	253
	Authority Office				1,073	1,073	2,146	1,073	1,073	2,146
	Durham				6,187	6,186	12,373	6,187	6,186	12,373
	Sundry				800	801	1,601	800	801	1,601
Sydenham Valley	Campbell				4,466	4,460	8,926	4,466	4,460	8,926
	Coldstream	368	368	736	186	186	372	554	554	1,108
Upper Thames	Petrolia	230	230	460	1,006	1,000	2,006	1,236	1,230	2,466
	Shetland				2,673	2,673	5,346	2,673	2,673	5,346
	Dingman's Creek				814	814	1,628	814	814	1,628
	Fanshawe				1,875	1,874	3,749	1,875	1,874	3,749
	Pitcock				9,260	9,259	18,519	9,260	9,259	18,519
	Tree Planting				1,993	1,993	3,986	1,993	1,993	3,986
	Wildwood				28,151	27,719	55,870	28,151	27,719	55,870
TOTALS		\$418,525	417,067	835,593	847,461	949,371	1,796,832	1,265,986	1,366,438	2,632,424

# C12-13 Conservation Authorities

AUTHORITY	TOTAL ACREAGE	ACREAGE ACQUIRED 1968	ACREAGE IMPROVED 1968	ATTEN- DANCE	CARS ENTERING AREA	CAMPSITES	CAMPSITE DAYS
Ausable River	2,003			42,632	10,351		
Big Creek Region	825		3	160,050	33,815	180	3,729
Cataraqui Region	3,300	632	4	4,250	2,000		
Catfish Creek	93						
Central Lake Ontario	577	1					
Credit Valley	1,814	30	155	122,180	30,325	130	4,213
Crowe Valley	26						
Ganaraska Region	149						120
Grand River	20,861	798	1,016	568,000	112,475	715	21,700
Halton Region	6,277	66	80	318,000	80,000		
Hamilton Region	1,584	716	340	68,500	15,050		
Holland Valley	610		12	18,600	4,900		
Kettle Creek							
Junction Creek	1,968	664	23	3,300	750		
Lakehead Region	233						
Lower Thames Valley	448		50				
Lower Trent Region							
Maitland Valley	400		5	4,000	1,500	74	
Mattagami Valley							
Metropolitan Toronto and Region	8,349		3,149	1,517,207	280,212	15	1,028
Mississippi Valley							
Moir River	733	100		26,000	9,000	60	632
Napanee Region	835			800	350	20	136
Niagara Peninsula	858	3		56,972	36,800	357	9,118
North Grey Region	738	52	15	47,000	17,000		
Nottawasaga Valley	672	42	28	13,800	3,050		
Otonabee Region	759		2	19,960	7,113	25	223
Otter Creek	105			17,000	5,000		
Prince Edward Region							
Raisin Region							
Rideau Valley							
Sauble Valley	245			4,000	1,800		
Saugeen Valley	263		35	37,100	11,750	27	105
Sault Ste. Marie Region							
South Nation River							
Sydenham Valley	556	35	190	130,000	31,500	10	10
Upper Thames River	8,381		150	146,000	30,430	62	17,365
Whitson Valley							
<b>TOTALS</b>	<b>63,662</b>	<b>3,139</b>	<b>5,257</b>	<b>3,332,531</b>	<b>725,171</b>	<b>1,675</b>	<b>58,379</b>

## C14 Expenditures for Acquisition and Development of Land Under The Parks Assistance Act (1960 to 1969)

MUNICIPALITY	GRANT AUTHORIZED	EXPENDITURES		
		MUNICIPALITY	PROVINCE	TOTAL
Anson, Hindon and Minden Twp.	10,000	6,864	6,865	13,729
Atikokan Twp.	5,000			
Bath Village	7,750			
Barrie City	5,000	424	425	849
Bastard and South Burgess Twp.	7,500	7,493	7,492	14,985
Bexley Twp.	38,000	33,313	33,313	66,626
Blind River Town	12,000	4,438	4,439	8,877
Bobcaygeon Village	47,000	34,574	34,573	69,147
Camden E. Twp.	21,750	6,555	6,555	13,110
Cape Crocker Reservation	49,950	37,835	36,898	74,733
Cobourg Town	22,500	19,454	19,454	38,908
Cochrane Town	13,350	7,575	7,574	15,149
Crystal Beach Village	5,000	2,591	2,591	5,182

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C14 *continued*

MUNICIPALITY	GRANT AUTHORIZED	EXPENDITURES		
		MUNICIPALITY	PROVINCE	TOTAL
Drury, Denison and Graham Twp.	15,000	24,018	3,920	27,938
Dryden Town	6,500			
Dysart Et Al Twp.	35,000	8,500	8,500	17,000
Elliot Lake I.D.	2,500			
Essa Twp.	5,000	4,400	4,399	8,799
Fort William City	50,000	49,648	49,554	99,202
Garden River Reservation	10,000			
Goderich Town	5,000	2,634	2,634	5,268
Gore Bay Town	2,500			
Gravenhurst Twp.	5,000	3,564	3,564	7,128
Guelph Twp.	15,000	7,907	7,792	15,699
Haldimand County	26,350	18,001	18,001	36,002
Hamilton City	70,000	12,570	12,570	25,140
Huntsville Twp.	30,750	17,234	17,234	34,468
Huron Twp.	1,500	1,234	1,233	2,467
Innisfil Twp.	48,450	36,313	34,947	71,260
Iroquois Town	15,000	11,905	11,905	23,810
Kenora Town	48,016	41,813	41,595	83,408
Kettle Point Reservation	26,525	19,906	19,905	39,811
Lakefield Village	3,000			
Leamington Town	56,150	36,467	36,465	72,932
Listowel Town	11,100	10,892	8,185	19,077
Little Current Town	22,425	20,946	20,945	41,891
L'Orignal Village	44,000	23,711	23,664	47,375
Marmora Village	5,500	4,570	4,570	9,140
Nepean Twp.	50,000	56,367	50,000	106,367
Orillia Town	60,730	59,750	59,736	119,486
Orillia Twp.	8,500	13,325	8,500	21,825
Oso Twp.	10,000	9,325	9,326	18,651
Ottawa City	100,000	100,000	100,000	200,000
Owen Sound City	37,500	36,183	36,182	72,365
Pembroke Town	26,250	19,386	19,385	38,771
Penetanguishene Town	25,275	24,849	24,839	49,688
Perth Town	5,000	4,594	4,593	9,187
Peterborough City	75,600	65,348	65,347	130,695
Plympton Twp.	20,000			
Port Arthur City	61,000	67,064	61,000	128,064
Portland Twp.	2,000			
Port Perry Village	27,853	6,714	6,714	13,428
Rama Reservation	4,500			
Rayside Twp.	30,075	19,131	19,130	38,261
Rockland Town	7,500	3,250	3,250	6,500
Sarnia City	27,000	96,600	85,563	182,163
Sarnia Twp.	83,175	17,917	17,917	35,834
Saugeen Twp.	5,000			
Sault Ste. Marie City	50,000	50,177	50,000	100,177
Shuniah Mun.	5,100	2,925	2,925	5,850
Six Nations Reservation	4,750	5,523	4,750	10,273
Southampton Town	15,000	9,619	9,619	19,238
Sudbury City	134,750	97,497	95,836	193,333
Sundridge Village	1,000			
Sutton Village	37,500			
Terrace Bay Twp.	6,000			
Thessalon Town	33,000	18,814	18,814	37,628
Walpole Island Reservation	5,000			
Walsingham N. Twp.	7,500	6,984	6,984	13,968
Warton Town	7,000	5,299	5,299	10,598
Whitefish Bay Reservation	10,000			
Wingham Town	37,490	22,360	22,359	44,719
TOTALS	\$1,826,114	\$1,336,350	\$1,279,829	\$2,616,179



*Some people just like to have fun in the water like these youngsters in the Humber River at the Boyd Conservation Area.*

Use-rates in most Conservation Areas in 1968 went up by about 20 per cent, and in some cases more than doubled the 1967 figures. Visitors to the Grand River Conservation Areas were up over 82,000 compared to the preceding year. The Metropolitan Toronto and Region Conservation Authority was up by 238,000, and all Authorities recorded the highest levels of use to date. Exceptionally good weather on week-ends and increased use in winter, coupled with population growth, mainly accounted for this.

Five new Conservation Areas were officially opened: Monora in the Credit, Mountsberg in the Halton, Milne in the Metropolitan Toronto and Region and A. W. Campbell and Petrolia in the Sydenham. They represent a broad spectrum of recreation opportunities and demonstrate the diversity of the Authorities' recreation-oriented programs.

Among others, the Saugeen, Rideau, Cataraqui, Nottawasaga, Grand and Kettle Authorities were actively engaged in the investigation of specific sites for proposed Conservation Areas prior to the acquisition of land.

Major land acquisitions for proposed Conservation Areas were undertaken in the Central Lake Ontario, Nottawa-

wasaga, Grand, Lower Thames, Hamilton, Sydenham, and North Grey Authorities. In the North Grey, additions to the Epping Lookout is representative of Authority interest in roadside areas from which outstanding views of the surrounding landscape may be obtained.

Many Authorities have in addition enlarged the boundaries of existing Conservation Areas as land becomes available. Total land purchases for Conservation Areas over the year amounted to 2,365 acres.

Plans for Conservation Areas development were completed or presented for approval to the Branch by the Credit Authority on the Meadowvale and the Limehouse Areas, the Otonabee on Squirrel Creek, the Upper Thames on Wildwood and Pittock and the Sydenham on Warwick and Running Creek. In addition, planning studies are underway, one notable example being that of Gould Lake in the Cataraqui Region.

During the past year the Grand River Authority undertook a major Recreation Research Program involving the inventory and classification of recreation lands and a Park User Survey of Conservation Areas within the watershed.



A total of about 30 miles of nature trails has been built by the following Authorities during the past year: Cataraqui Region, Credit Valley, Grand River, Hamilton Region, Holland Valley, Lower Thames Valley, Metropolitan Toronto and Region, Saugeen Valley and Sydenham Valley. The Metropolitan Toronto and Region Conservation Authority opened its first field education centre at Cold Creek, and proposes a similar centre at Claremont. An outdoor education centre was officially opened at the A. W. Campbell Area by the Sydenham Authority in conjunction with the opening of that Conservation Area.

One of the most valuable ways Authority lands are used is in providing sites for youth camps. Among the areas which held day camps during the summer were: Holland Landing, Rockwood, Tottenham, Dingman Creek, Embro and Dorchester. The Halton Region hosted the Pro-

vincial Boy Scout Jamboree at Kelso in August, and the Upper Thames agreed to host the National Campers and Hikers Convention at Fanshawe in 1971.

During 1968, the Recreation Section carried out the watershed survey of the newly formed Mississippi Valley Conservation Authority. As well, a complete facilities inventory and landscape analysis were carried out in all Conservation Areas.

Branch staff has continued to participate in the planning studies of an inter-departmental nature. These include the Ontario Department of Tourism and Outdoor Recreation Plan, the Rideau Canal and Waterway, and the Niagara Escarpment. The Branch was represented at the Canada National Parks Conference in Calgary in October and at the Annual Conference of The Parks and Recreation Association of Canada.



The major activity of the branch's historical section is to uncover material and produce reports concerning the development of, and changes in, the resources of the province's different watersheds. In the past year, a report on the Rideau Valley was completed and presented, research was continued into the Rideau water system (disclosing that the Canal was intended to be, far more than is usually understood to have been the case, a commercial as well as a military undertaking), and detailed investigation into the Mississippi watershed (the area of great timber and lumbering activities throughout most of the nineteenth century and into the twentieth) was partially completed. A short report on the Mississippi Valley was completed, prior to the starting of a full, lengthy one incorporating original material that has come to light, and in addition some research was done on the Lower Trent area, which will be the main focus during the coming year.

The branch's listings of floods that have occurred during the province's recorded history, a project that has necessarily been underway for years, was also brought largely up-to-date, although gaps unavoidably remain.

Most conservation authorities initiate and support local historical projects as part of their conservation programs. During the past year, such activities have included the following:

Efforts by the Lakehead Region Authority to determine the background of the Indian graveyard at Hurkett, prior to any work being carried out there.

The protection of Indian relics at Springwater by the Catfish Creek Conservation Authority.

The opening of the Fire House in June, and Roblin's Mill in July at the Metro Toronto Authority's Pioneer Village (visited by well over 100,000 persons in 1968), where a Print and Weaver's Shop, a Town Hall, and a Gunsmith's Shop are also in various stages of completion (hundreds of antique articles were donated, and a lesser number purchased, for use in the village, in 1968).

The like purchase of historically valuable items by the Niagara Peninsula Authority, to add to the "treasure house of historical items" that it already has housed under one roof.

Investigation into the acquisition of a dash wheel pump and land, to serve as a historic relic of the drainage works in the area, by the Lower Thames Valley Authority.

The presentation by Dr. Wilfrid Jury of a large number of articles having historical importance, collected over a long period of time by himself and his father, to the Upper Thames River Authority's Fanshawe Village, an undertaking which Dr. Jury has supported as "a very worthwhile form of visual education" with the potential to draw on an even greater radius than that from which the present increasing attendance comes.

Two final items help demonstrate the interconnection of conservation and historical consciousness. One is the story of the first two decades of organized conservation work in the Upper Thames River Conservation Authority



**C15 Expenditures for Acquisition and Development of Land Under The Parks Assistance Act**  
**Fiscal Year Ended March 31, 1969**

MUNICIPALITY	EXPENDITURE		
	MUNICIPALITY	PROVINCE	TOTAL
Anson, Hindon and Minden Twp.	1,190.24	1,190.24	2,380.48
Barrie City	424.46	424.47	848.93
Bastard and South Burgess Twp.	7,492.75	7,492.74	14,985.49
Bobcaygeon Village	9,043.06	9,043.06	18,086.12
Crystal Beach Village	2,591.25	2,591.25	5,182.50
Drury, Denison and Graham	24,018.11	3,919.46	27,937.57
Dysart Et Al	8,500.00	8,500.00	17,000.00
Essa Twp.	4,399.60	4,399.60	8,799.20
Gravenhurst Twp.	3,564.00	3,564.00	7,128.00
Guelph Twp.	7,906.92	7,792.52	15,699.44
Hamilton City	12,570.05	12,570.05	25,140.10
Huntsville Twp.	7,064.36	7,064.35	14,128.71
Huron Twp.	1,233.71	1,233.71	2,467.42
Innisfil Twp.	18,356.23	18,356.23	36,712.46
Iroquois Village	11,006.08	11,006.08	22,012.16
Kettle Point Reservation	4,878.58	4,878.57	9,757.15
Leamington Town	2,696.74	2,696.74	5,393.48
Little Current Town	6,336.78	6,336.78	12,673.56
L'Orignal Village	958.36	911.74	1,870.10
Marmora Village	4,570.00	4,570.00	9,140.00
Nepean Twp.	56,367.37	50,000.00	106,367.37

MUNICIPALITY	EXPENDITURE		
	MUNICIPALITY	PROVINCE	TOTAL
North Walsingham Twp.	900.00	900.00	1,800.00
Orillia Town	4,779.67	4,779.67	9,559.34
Orillia Twp.	6,472.80	1,647.81	8,120.61
Oso Twp.	9,325.28	9,325.27	18,650.55
Ottawa, Corp. City	100,000.00	100,000.00	200,000.00
Owen Sound City	14,692.61	14,692.60	29,385.21
Pembroke Town	19,385.70	19,385.69	38,771.39
Penetanguishene Town	24,848.99	24,838.97	49,687.96
Perth Town	4,593.47	4,593.48	9,186.95
Peterborough City	825.00	825.00	1,650.00
Port Arthur City	33,424.93	27,360.77	60,785.70
Port Perry Village	5,916.14	5,916.14	11,832.28
Rayside Twp.	4,613.89	4,613.88	9,227.77
Rockland Town	3,250.00	3,250.00	6,500.00
Sarnia City	35,894.14	27,000.00	62,894.14
Sarnia Twp.	17,917.21	17,917.20	35,834.41
Shuniah	36.85	36.86	73.71
Six Nations Indian Reserve	1,918.53	1,146.56	3,065.09
Sudbury	2,794.13	2,794.13	5,588.26
Sudbury City	15,692.19	15,692.17	31,384.36
Thessalon Town	5,316.00	5,315.99	10,631.99
Warton Town	4,117.09	4,117.08	8,234.17
Wingham Town	988.42	988.42	1,976.84
<b>TOTALS</b>	<b>\$512,871.69</b>	<b>\$465,679.28</b>	<b>\$978,550.97</b>

written by a conservationist who is also a historian, Mr. T. J. Dolan of Stratford. The other is that since the latter end of 1968 there has been wide-spread interest in a province-wide Conservation Foundation, inspired by the long and successful example set by Mr. Fred Wade who certainly needs no introduction here.

#### THE PARKS ASSISTANCE ACT

The Parks Assistance Act was passed by the Legislature in 1960, making provision for the payment to municipalities of grants of 50 per cent, up to a maximum grant of \$50,000 on the cost of acquisition, planning and development of municipal parks as public recreational areas complementary to provincial parks. In 1966 legislation was passed, which increased the maximum total grants to \$100,000, of which sum a maximum of \$25,000 would apply on the cost of land acquisition.

Under an amendment to the Act which was passed in 1962, Indian Bands may participate in all benefits available under the Act. This places at their disposal, on the same basis as for urban and rural municipalities throughout the province, much-needed assistance in the acquisition and development of revenue-producing camping and picnic-ing areas on Indian Reserve lands.

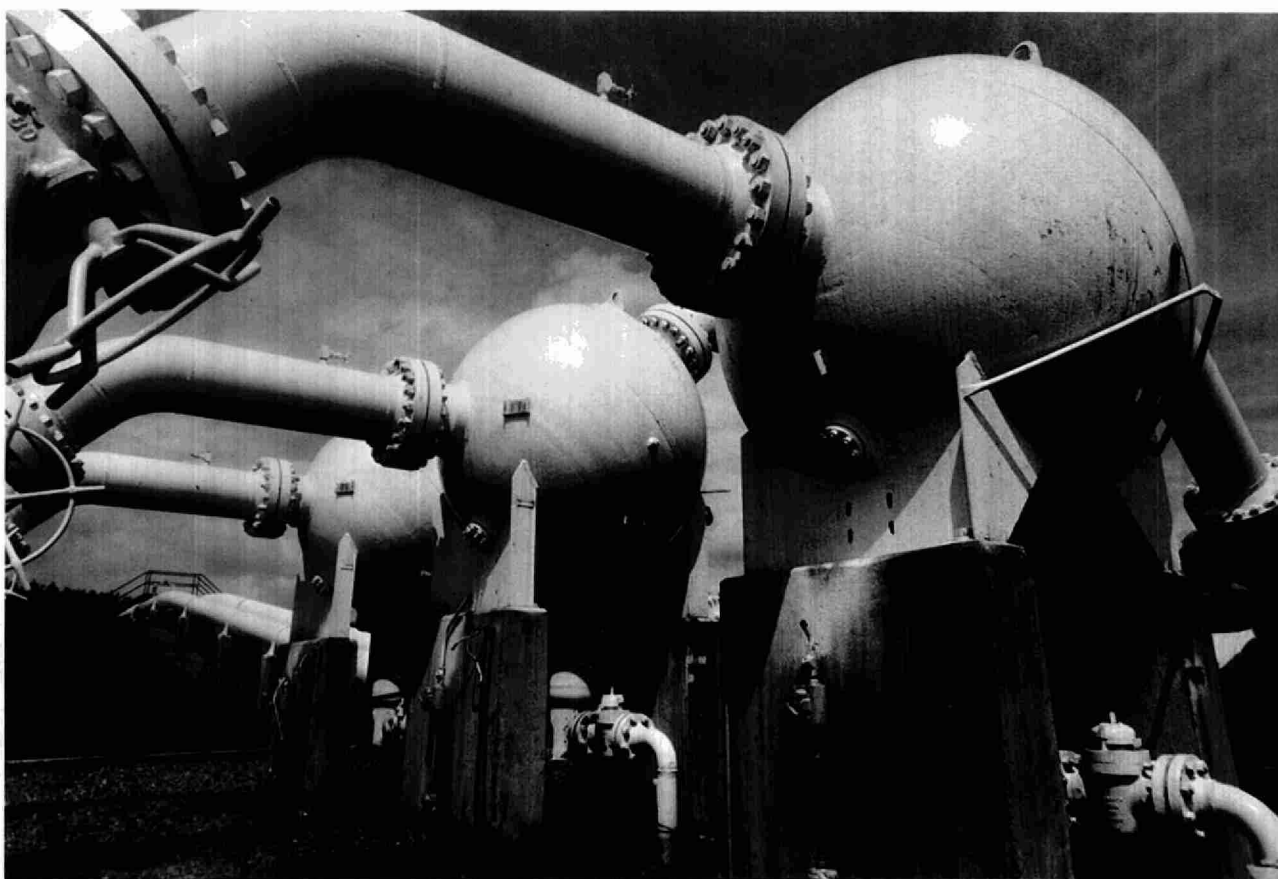
In order to qualify for a grant under the Act, a munici-

pality must provide sites for overnight tent and trailer camping and a supply of safe drinking water, as well as picnic and sanitary facilities, entrances controlling admission to the park and the collection of fees which are not less than those charged in provincial parks. However, by a 1967 amendment to the Regulations under this Act, these requirements may be waived where the purpose of the park is to develop and utilize a natural beach for recreation.

Other development work in these parks which is eligible for grant includes construction of roads, picnic shelters, facilities for boat docking, aquatic and winter sports, cooking and washing.

During the fiscal year under review, 14 new municipal parks were approved for assistance under the Act, together with one Indian Band park. This represents an addition of 808.5 acres to the publicly owned recreational land resources within the Province and brings to a total of 73 the number of parks approved for development under The Parks Assistance Act.

Out of a total of \$592,818 approved for the assistance of municipalities in the development of Approved Parks during the year, \$118,750 was authorized to apply on the cost of acquiring and carrying out preliminary development work in these new areas.



*Part of the Trans-Canada Pipeline system at Hagar, about 30 miles east of North Bay.*

**The Energy Branch**, by the legislative authority of The Energy Act 1964, is responsible for the administration of regulations on the drilling for and the production of oil and gas, the transmission and storage of gas, and the distribution and utilization of gas, propane and fuel oil for the Province of Ontario. The responsibilities of the Branch were expanded to include gasoline handling under the terms of The Gasoline Handling Act, 1966.

The Acts, the Regulations and the Codes are subject to continuing improvement and expansion in keeping with the greatly increased usage of hydrocarbon fuels in the Province. The Branch develops, issues and administers safety codes for the fuel industry and the public. Maintenance of safe operations and practices is achieved by inspection and licensing. Training of industry personnel and public education have become significant functions of the Branch.

The continuing objective of the Energy Branch is to cultivate and maintain a safe and adequate hydrocarbon fuel base within the energy sector of Ontario through the execution of the regulatory function in the areas of fuel safety and resources management and the concurrent appraisal of significant matters affecting the energy sector.

## HIGHLIGHTS

**Total energy** consumption in Ontario in 1968 increased seven per cent over 1967. Coal and natural gas consumption, both nine per cent over 1967, had the largest increases for individual energy sources.

**Highlights** of Ontario's oil and gas industry during 1968 included a general increase in exploration activity, a high success ratio for exploratory drilling and several significant discoveries, both on land and offshore.

**Ontario crude oil** production of 1,150,779 barrels decreased seven per cent from the 1967 level. Natural gas production of 12,065.8 million cubic feet was a 15 per cent decrease from 1967.

**Completion** of the new natural gas pipeline from western Canada in the late fall enabled demands to be met increasingly from Canadian sources and less from the U.S.A. In 1968, additions to oil pipeline facilities and refinery capacities also resulted in greater supplies from western Canada and a lower inflow of U.S. oil products.

## ENERGY STUDIES

The Energy Studies Section is responsible for ensuring the fullest cognizance and appreciation of the energy sector in Ontario by providing continuing support and advisory services within the Branch.

Within the context of the complex energy field, the Section maintains a record of provincial oil and gas statistics and develops informative appraisals of matters evolving within the energy sector, carrying out special studies as required on technological and economic developments affecting the supply, distribution and utilization of all fuels, including electricity, nuclear energy and fossil fuels, insofar as these contribute to the total energy picture.

Increased liaison with industry, other provinces and the Federal Government is becoming more important as demand for all forms of energy grows and as the Province continues to be dependent on supplies originating beyond its borders.

### PRIMARY ENERGY CONSUMPTION IN ONTARIO

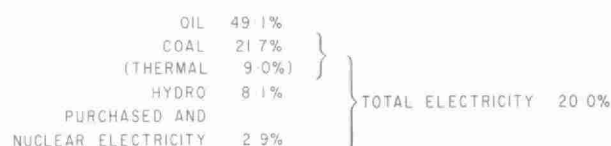
Primary energy consumption may be defined as the input or consumption of the initial energy source, including primary energy lost in the transformation process. For instance, one kilowatt-hour of electricity of 3,412 British Thermal Units per Hour (BTUH) is assumed to require 10,000 BTUH of heat input from coal or nuclear fuel used in thermal generating stations.

A measure of each energy source's participation in the total energy picture is achieved by converting each to its heat equivalent measured in British Thermal Units (BTU). The following charts illustrate the relative magnitude of primary energy consumption in Ontario for 1968, based on estimates produced by the Branch.

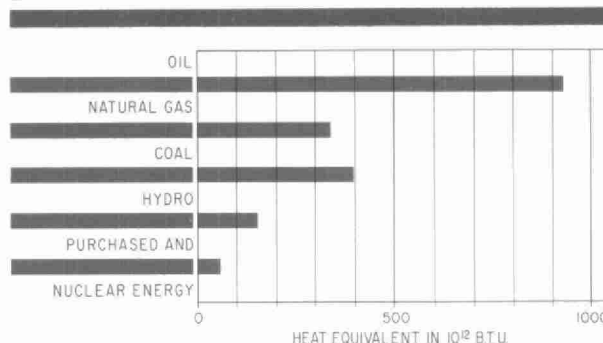
The total primary energy consumption in 1968 was nearly  $1,900 \times 10^{12}$  BTU's, a 7.1 per cent annual increase compared to 5 per cent in 1967.

Oil continues to dominate the energy sector of the

**Figure 1: Primary Energy Consumption by Source as Per Cent of Total Consumption for 1968**



**Figure 2: Primary Energy Consumption in Ontario in 1968**



economy but there are indications that it is slowly losing ground to natural gas and electricity which currently are achieving the highest growth rates. Coal's loss of participation in most fuel markets is being more than offset by increasing demand for electrical generation.

Primary electricity from water and nuclear power represents 8.6 per cent of total energy consumption. However, total electricity is 20 per cent, reflecting increasing use of coal-fired generating stations. Electricity purchased from other utility systems outside Ontario represents a supply deficiency within the Province.

### E1 Ontario Energy Consumption Annual % Increases

	1968	1967
OIL	5.6	4.9
NATURAL GAS	9.1	14.1
COAL	9.8	2.2
ELECTRICITY (primary & secondary)	7.6	8.4
TOTAL PRIMARY ENERGY	7.1	5.0

### OIL

Ontario crude oil production continued to account for around one per cent of total refinery requirements despite a seven per cent reduction of the former from the 1967 level. Crude oil from western Canada increased over six per cent because of expanded pipeline capability during the last four months of 1968. Refinery production increased by five per cent, net product transfers from other provinces increased 23 per cent and net product imports from the United States decreased 22 per cent.

Total oil refinery capacity was increased nearly nine per cent in 1968 to keep pace with the increasing demand for petroleum products and the additional crude oil supplies made available from western Canada.

Total oil products sales were nearly 152 million barrels, an increase of 5.7 per cent over 1967. Ontario continued to account for more than 30 per cent of total products sales in Canada.

## E2 Oil Balance 1968<sup>1</sup>

SUPPLY	QUANTITIES IN THOUSANDS OF BARRELS	PER CENT	
		OF TOTAL	CHANGE OVER 1967
<i>Crude Oil<sup>2</sup></i>			
Ontario Production	1,151	0.7	—7.2
From Western Provinces	118,740	70.3	6.3
Imports from Venezuela	470	0.3	5.6
Net Transfers & Other Materials	—15		
<b>Total Run to Stills</b>	<b>120,346</b>	<b>71.3</b>	<b>5.1</b>
<i>Products</i>			
Transfers from Other Provinces	36,939	21.9	22.0
Imports	8,039	4.8	—11.2
Other Receipts	3,450	2.0	64.2
<b>Total Product Receipts</b>	<b>48,428</b>	<b>28.7</b>	<b>16.9</b>
<b>Total Supply</b>	<b>168,774</b>	<b>100.0</b>	<b>8.2</b>

## DISPOSITION

<i>Consumption</i>			
Customer Sales	151,516	89.8	5.7
Company Use	9,133	5.4	3.9
<b>Total Consumption</b>	<b>160,649</b>	<b>95.2</b>	<b>5.6</b>
<i>Other</i>			
Transfers to Other Provinces	3,918	2.3	14.6
Exports	1,829	1.1	70.5
Product Inventory Changes	990	0.6	
Losses	1,388	0.8	
<b>Total Other Disposition</b>	<b>8,125</b>	<b>4.8</b>	<b>112.3</b>
<b>Total Disposition</b>	<b>168,774</b>	<b>100.0</b>	<b>8.2</b>

<sup>1</sup> Based on data from DBS Monthly Reports, No. 45-004.

<sup>2</sup> Crude oil, condensate and pentanes plus, comingled propane and butane mixes.



## E3 Canadian Oil Requirements in % in Total for 1968

	ONTARIO	PRAIRIES & N.W.T.	QUEBEC & MARI- TIMES	B.C.	TOTAL
<i>CRUDE RECEIPTS</i>					
Canadian	25.0	15.7		8.6	49.3
Imported	0.1		36.9		37.0
<b>Total</b>	<b>25.1</b>	<b>15.7</b>	<b>36.9</b>	<b>8.6</b>	<b>86.3</b>
Net Product Imports	1.3	0.1	12.3	0.7	14.4
Provincial Transfers <sup>1</sup>	6.7	1.8	5.9	0.3	0.7
<b>Total Consumption</b>	<b>33.1</b>	<b>14.0</b>	<b>43.3</b>	<b>9.6</b>	<b>100.0</b>

<sup>1</sup> Product Transfers between provinces plus other materials to stills plus inventory changes.

## E4 Ontario Net Sales of Petroleum Products, 1968<sup>1</sup>

	QUANTITIES IN THOUSANDS OF BARRELS	% OF TOTAL
Propane & Propane Mixes <sup>2</sup>	1,114	0.7
Butane & Butane Mixes	70	
Petro-chemical Feed Stock	6,353	4.2
Naphtha Specialties	1,333	0.9
Aviation Gasoline	253	0.2
Motor Gasoline	55,670	36.7
Aviation Turbo Fuel	3,573	2.4
Kerosene, Stove Oil, Tractor Fuel	3,358	2.2
Diesel Fuel Oil	9,151	6.0
Light Fuel Oil (Nos. 2 & 3)	38,085	25.1
Heavy Fuel Oil (Nos. 4, 5 & 6)	26,072	17.2
Asphalt	3,838	2.5
Coke	519	0.4
Lubricating Oil & Grease	1,887	1.3
Other Products	240	0.2
<b>TOTAL ALL PRODUCTS</b>	<b>151,516</b>	<b>100.0</b>

<sup>1</sup> Based on data from DBS Monthly Reports, No. 45-004.

<sup>2</sup> Represents Ontario refinery production of crude oil only.

## E5 Ontario Refining Capacity

*Primary Distillation Capacity at Year End  
in Thousands of Barrels per Calendar Day.*

		1967	1968
SHELL:	Oakville	34.0	34.0
	Sarnia	40.0	40.0
B.A.:	Clarkson	55.4	55.4
B.P.:	Trafalgar	32.0	32.0
IMPERIAL:	Sarnia	94.0	122.0
TEXACO:	Port Credit	37.0	37.0
SUN OIL:	Sarnia	30.0	30.0
<b>TOTAL ONTARIO</b>		<b>322.4</b>	<b>350.4</b>

*A pump jack at work  
in a southwestern  
Ontario oil field.*

## NATURAL GAS

Sales of natural gas to consumers during 1968 increased more than ten per cent and retained its ratio of around 40 per cent of the total sales to consumers in Canada. Receipts of natural gas from western Canada were unchanged to the end of October. Following completion of the new pipeline to Sarnia, substantial increases occurred involving more than 50 per cent in November and 45 per cent over the same months in 1967. The higher inflow of western gas permitted proportionate reductions in imports from the United States and nearly three per cent greater deposits into storage. Gas used in transmission operations decreased, although its ratio to total gas movements from western Canada remained at around nine per cent. A decrease of

some 15 per cent in production from Ontario wells reduced their contribution to total requirements to around three per cent from four per cent in 1967.

The ten per cent sales increase represented a decline in growth from the 16 per cent advance in 1967 but compares with a similar growth rate for 1966. Industrial users accounted for less than one per cent of the total number of consumers but over 50 per cent of the total sales in 1968. Industrial sales increased 14 per cent, commercial sales 13 per cent and residential sales three per cent.

Canada's first large-scale natural gas liquefaction plant was commissioned in September at Hagar, 30 miles east of Sudbury. This facility permits the natural gas utility to liquefy and store natural gas during the low-demand summer periods for use in the peak winter periods.

### E6 Ontario Gas Balance 1968

		PER CENT	
	THOUSANDS CUBIC FEET <sup>1</sup>	OF TOTAL	CHANGE OVER 1967
SUPPLY			
Ontario production	12,065,829	3.5	-15.2
Receipts from:			
Western Canada	254,087,083	73.1	7.3
U.S.A.	81,449,956	23.4	15.8
	335,537,039		
Gas from storage (net)	96,995		N.A.
Propane air	11,032		N.A.
TOTAL SUPPLY	347,710,895	100.0	8.2
DISPOSITION			
Sales to customers	308,100,295	88.6	10.3
Free gas	56,138		
Company use	25,891,808	7.4	-3.7
	25,947,946		
TOTAL CONSUMPTION	334,048,241	96.0	9.1
Gas to province of Quebec (net)	3,736,638	1.1	14.3
Exports to U.S.A.	4,849,189	1.4	21.4
Metering, Line Loss and other unaccounted for	5,076,827	1.5	
	13,662,654		
TOTAL DISPOSITION	347,710,895	100.0	8.2

<sup>1</sup> at 14.73 p.s.i.a.

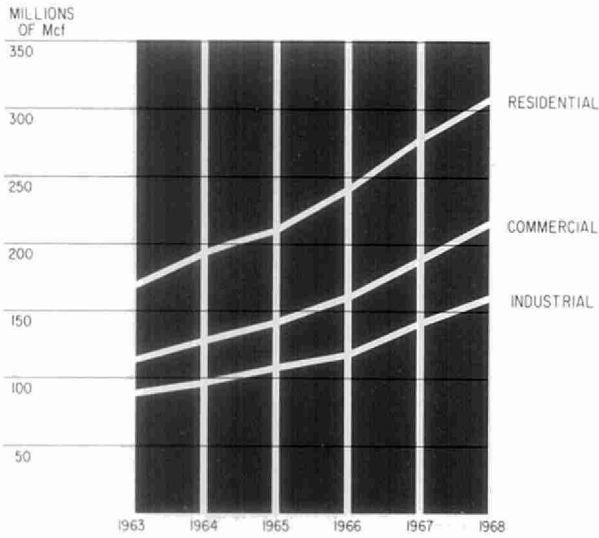
### E7 Natural Gas Sales in Ontario 1968

#### Comparative Totals by Customer Categories

*Quantities in Thousands Cubic Feet*

CATEGORY OF CUSTOMER	1968		PER CENT CHANGES 1968			
	NUMBER OF CUSTOMERS	QUANTITIES	OVER 1967		OVER 1963	
			NUMBER OF CUSTOMERS	QUANTITIES	NUMBER OF CUSTOMERS	QUANTITIES
Residential	691,494	91,665,862	+4.1	+ 3.0	+21.2	+ 47.8
Commercial	62,570	57,510,124	+6.7	+13.1	+35.0	+156.3
Industrial	7,486	158,924,309	+4.2	+14.0	+23.8	+ 91.0
<b>Totals</b>	<b>761,550</b>	<b>308,100,295</b>	<b>+4.3</b>	<b>+10.3</b>	<b>+22.3</b>	<b>+ 83.7</b>

**Figure 3: Natural Gas Sales by Year and Category**



## PIPELINES

While pipeline systems in the Province continued to expand in response to greater demand in areas already serviced and to new demand areas not previously serviced, the most significant programs of expansion were in the vast networks of pipeline feeding natural gas and crude oil from western Canada to Ontario.

The new 1,000-mile 36-inch pipeline of Great Lakes Gas Transmission Company was completed in October. The additional supply of natural gas from western Canada was immediately used to fulfill increased sales contracts between Trans-Canada Pipe Lines Limited and Ontario's natural gas utilities. The net result has been the elimination of temporary imports of natural gas from the United States into southern Ontario, the provision of natural gas to Sault Ste. Marie for the first time and, generally, provision for the continually escalating demand for energy in the Province.

### E8 Pipeline Mileage in Ontario 1968

NATURAL GAS PIPELINES		MILES OF PIPELINE
Gathering and Transmission		4,669
Distribution		14,425
Total		19,094
OIL PIPELINES		
Crude Oil Trunk Lines		289
Oil Product Lines		870
Total		1,159
Total All Pipelines		20,253

Interprovincial Pipe Line Company concurrently completed the first stage of its second loop from Superior in Wisconsin to Sarnia. This stage of 464 miles of 34-inch pipe runs from Superior to the Chicago area. The second stage in the new loop, 200 miles from Chicago to Sarnia, is expected to be built by 1970. However, U.S. deliveries are already being routed through the new line. This diversion has resulted in increased transport of crude oil from western Canada to Ontario's refineries through the main line between Superior and Sarnia.



*The cold box at the liquefied natural gas plant at Hagar.*



## COAL

The total receipts of coal, excluding coke, in Ontario in 1968 were about 67 per cent of the total receipts in Canada, with Ontario accounting for over the bulk of the net landed imports of coal into Canada.

Demand for anthracite and lignite is declining while bituminous coal demand is increasing due to greater participation of the latter in the industrial sector, primarily as a fuel for electricity generation.

Imported bituminous coal from the United States accounted for 93 per cent of Ontario's total coal supply because of the ready availability of low-cost supplies to

the Province's major demand centres. Remaining supplies were met by receipts from Nova Scotia with lesser amounts from the western provinces, mostly to the Lakehead.

In 1968, total coal demand increased 7.7 per cent over the total for 1967. The most significant gain was a 15 per cent increase in the industrial demand for central Ontario (i.e. for Metropolitan, Niagara, Upper Grand River and Georgian Bay districts). Total coal consumption increased 9.8 per cent reflecting a substantial decrease in net inventory. Ontario Hydro alone consumed 6,085,796 tons of bituminous coal for the generation of electricity, representing over 60 per cent of total coal consumption by industry.

### E9 Ontario Coal Balance 1968

*In Thousands of Short Tons rounded to the nearest 1,000*

SUPPLY	ANTHRACITE	BITUMINOUS <sup>4</sup>	LIGNITE	1968 TOTAL	% CHANGE FROM 1967
Domestic:					
Western Provinces		58	159	217	-30.2
Nova Scotia		1,038		1,038	-1.2
Total		1,096	159	1,255	-7.9
Imports:					
U.S.A.	176	15,804		15,980	9.2
<b>Total Coal Supply</b>	<b>176</b>	<b>16,900</b>	<b>159</b>	<b>17,235</b>	<b>7.7</b>
DEMAND					
Industrial:					
Consumption <sup>1</sup>	75	9,624	155	9,854	6.7
Net to Inventory <sup>2</sup>	-1	257	1	257	-51.7
Total Demand	74	9,881	156	10,111	3.5
Other <sup>3</sup> :					
Total Demand	102	7,020	3	7,125	14.4
<b>Total Coal Demand</b>	<b>176</b>	<b>16,901</b>	<b>159</b>	<b>17,236</b>	<b>7.7</b>

#### NOTE:

1 Industrial includes electric utilities, mining and manufacturing.

2 Excludes stocks held by firms using less than 1,000 tons per year and stocks held by coke producers.

3 Retail to residential, commercial and small industrial users including railway, ship bunker, government and institutional consumption.

4 Includes sub-bituminous in negligible quantities.

Source—DBS Cat. No. 45-002

### E10 Ontario Industrial Coal Consumption by Economic Regions

*In Thousands of Short Tons, rounded to nearest 500*

ECONOMIC REGIONS	ANTHRACITE	BITUMINOUS	LIGNITE	1968	
				TOTAL	% CHANGE FROM 1967
Eastern Ontario		147.0		147.0	13.1
Lake Ontario	2.5	216.5		219.0	-7.8
Central Ontario—Metropolitan, Niagara, Upper Grand R., Georgian Bay	52.0	6,459.0		6,511.0	15.1
Southern Ontario—Lake Erie, Lake St. Clair	20.0	1,712.5		1,732.5	-9.9
Northeastern Ontario		834.0		834.0	10.8
Northwestern Ontario		255.0	155.0	410.0	-23.6
<b>Total Ontario 1968</b>	<b>74.5</b>	<b>9,624.0</b>	<b>155.0</b>	<b>9,853.5</b>	<b>6.7</b>

Note: No sub-bituminous coal reported

Source: DBS Cat. No. 45-002

## ELECTRICITY

The total consumption of electricity in 1968 was 61,027 million kilowatt-hours, an increase of 7.6 per cent over 1967. In terms of end-use consumption, hydroelectricity provided for 62.8 per cent of total consumption and thermal electricity 29.5 per cent compared to 66.3 and 25.4 respectively for 1967. The remainder was provided by electricity purchased from outside Ontario. Nuclear generation, though small, accounted for 886 million kilowatt-hours of electricity.

Hydro, or water power, continues to be the dominant source of electricity, but the trend is favouring thermal generation, both conventional coal-fired plants and nuclear plants. In 1968 electrical generation from coal-fired generating stations increased 20 per cent. Ontario Hydro brought one million kilowatts of new capacity on line which includes the last three units (900,000 kw) of the Lakeview Generating station (coal-fired). The current Ontario Hydro commitment for new plant construction over the next ten years provides for 5.2 million kilowatts of coal-fired thermal power and 653,000 kilowatts of water power. This additional capacity of nearly 11.9 million kilowatts represents an ultimate doubling of current capability, consistent with normal electrical load growth.

### E11 Electric Energy Balance 1968 in Billions (10<sup>9</sup>)Kwh

SUPPLY	ONTARIO <sup>1</sup>		OHEPC <sup>2</sup>	
Utilities Generation				
Hydro	36.7	1.9 <sup>3</sup>	35.1	2.6 <sup>3</sup>
Thermal	16.7	27.4	15.9	22.3
Total	53.4	8.7	51.0	8.0
Industry Generation				
Hydro	1.6			
Thermal	1.3			
Total	2.9			
Total Generation				
Hydro	38.3	1.8	35.1	
Thermal	18.0	25.0	15.9	
Total	56.3	8.2	51.0	
Net Purchases	4.7		7.7	4.0
Total Supply	61.0	7.5	58.7	7.5

### DISPOSITION

#### Sales

Industrial	23.4	8.8
Commercial	6.9	9.5
Domestic & Farm	13.3	7.2
Street Lighting	0.4	5.7
Total Sales	44.0	8.6

#### Own Plant Use

Unallocated & Distribution	6.8	3.0
by Non-respondents	10.2	6.2

Total Disposition	61.0	7.5
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1 DBS 57-002

2 Ontario Hydro "Hydroscope"—1968 Annual Report Supplement

3 Per cent increase over 1967.

## FUELS SAFETY

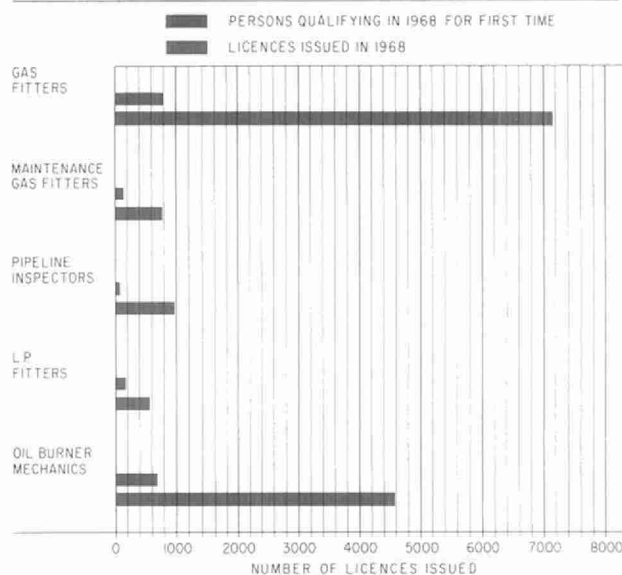
The Section is divided into an Inspection Unit and an Engineering Unit. The personnel of the Inspection Unit are located both at head office and throughout the 22 areas maintained in the Province. The personnel of the Engineering Unit are based at head office, but operate throughout the Province in support of the Inspection Unit.

### INSPECTION UNIT

The Inspection Unit is responsible for the enforcement of The Energy Act 1964, The Gasoline Handling Act, 1966, and the Regulations. Their activities include the inspection of natural gas, propane, fuel oil, and gasoline handling installations, including transmission and distribution pipelines; the inspecting and testing of gas, propane and fuel oil appliances which have not received laboratory approval; and field instruction and guidance to registered contractors, municipal officials and the public with reference to Department policy and code and regulation requirements.

During 1968, the Inspection Unit conducted over 31,000 inspections of such installations and equipment as natural gas and fuel oil pipelines, natural gas, propane and fuel oil appliances.

Figure 4: Certification

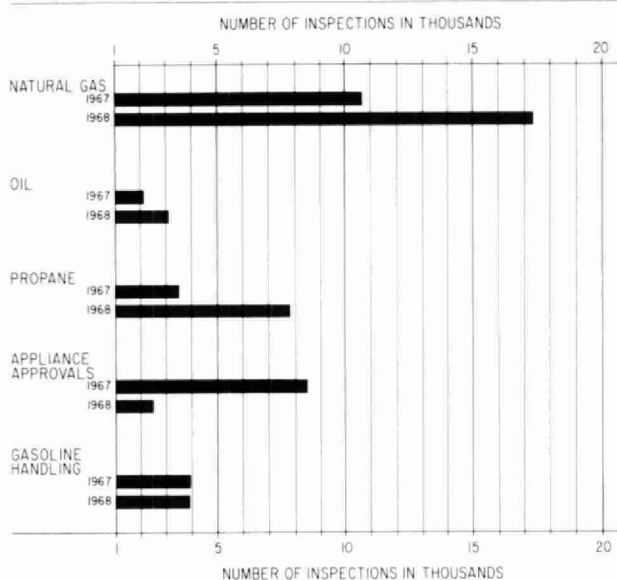




## ENGINEERING UNIT

The Engineering Unit is responsible for establishing acceptable operational standards and specifications relating to such fields as transmission, distribution storage and transportation of fuels, safe use of heating fuels, maintenance of

**Figure 5: Industry Inspections 1967 and 1968**



appliance and equipment, dispensing of automotive fuels, and installation and operation of storage, distribution and dispensing facilities.

Both units work very closely with industry in the development and evolution of safety standards. Closely allied with this liaison is the certification function within the Section under which gas fitters, propane fitters, pipeline inspectors and oil burner mechanics are instructed, examined and certified.

As part of the safety program, the following are licensed and registered: natural gas transmitters, natural gas, propane and pipeline-fuel oil distributors, heating appliance contractors and operators of bulk storage plants, service stations, wholesale outlets, and vehicles transporting petroleum products.

Under The Energy Act and The Gasoline Handling Act there are regulations known as The Ontario Gas Code, The Ontario Propane Code, and The Ontario Gasoline Handling Code and there is in final stages of preparation an Ontario Fuel Oil Code. Also in progress is a complete review of The Ontario Pipe Line Code.

A publication supplementary to The Energy Act is the "Titles of Appliance, Equipment and Accessory Specifications Approved for Use in Ontario under The Energy Act" and a similar "List of Specifications Approved under The Gasoline Handling Act" has also been published.

## TRAINING AND CERTIFICATION

In 1968 training assistance was provided for a variety of industry personnel and other Government Departments. Courses were prepared and conducted throughout the Province for the Ontario Water Resources Commission covering application of natural gas and fuel oil in their plant operations.

## E12 Licensing Activities

	No. OF LICENCES ISSUED 1968		No. OF CERTIFICATES ISSUED 1968
<b>LICENSED OPERATIONS</b>		<b>CERTIFIED PERSONS (SKILLS)</b>	
<b>Gas</b>		<b>Gas</b>	
Licence to Transmit	4	Fitters Certificates	7,149
Licence to Distribute	40	Maintenance Fitters Certificates	773
<b>Propane</b>		Pipeline Inspectors Certificates	973 <sup>1</sup>
Licence to Transfer	170	Service Fitters Certificates	26
Licence to Distribute	576	<b>Propane</b>	
Licence to Transport	242	Fitters Certificates	
<b>Fuel Oil</b>		Class I	372
Licence to Distribute by Pipeline	24	Class II	140
<b>Gasoline</b>		Class III	65
Licence to Transport	4,122 <sup>1</sup>	<b>Natural and Propane Gas</b>	
Licence to Operate a Bulk Storage Plant	1,143	Dual Fitters Certificates	298
Licence to Operate a Service Station or Marina	13,302 <sup>1</sup>	<b>Oil Burner Mechanics Certificates</b>	
<b>Oil &amp; Gas</b>		Class 2	4,423 <sup>1</sup>
Licence to Conduct Geophysical or Geochemical exploration	26	Class 3	74 <sup>1</sup>
Licence to Lease	144		
Licence to Produce	167		
Licence for Boring or Drilling Machine	63		
Registration of Contractors	2,923 <sup>1</sup>		
<b>Total Licences Issued</b>	<b>22,946</b>	<b>Total Certificates Issued</b>	<b>14,293</b>

<sup>1</sup>The expiry date for some of these licences and certificates has been extended through 1969 to establish renewals on a staggered basis.

Certification resulting from successful completion of examinations continued at a high level during the year. Examination centres are available in all areas of the Province. The number of persons qualifying for certification as oil burner mechanics, gas fitters, maintenance gas fitters, pipeline inspectors and propane fitters during 1968 for the first time exceeded 1,850.

#### LICENSING

The mechanization of the licensing procedure, introduced in 1965, was reinforced in 1966 with the introduction of a system for staggering the effective renewal dates for licences and certificates. This system was implemented in 1967 and continued in 1968. These measures have helped to level out the work load throughout the year and to permit increased

efficiency in the licensing operation while reducing the time and cost involved.

Nearly 23,000 licences were issued in 1968 for operations involving oil, gas and associated fuels. In excess of 14,000 certificates were issued to persons qualifying in the various skills in the fuel industry.

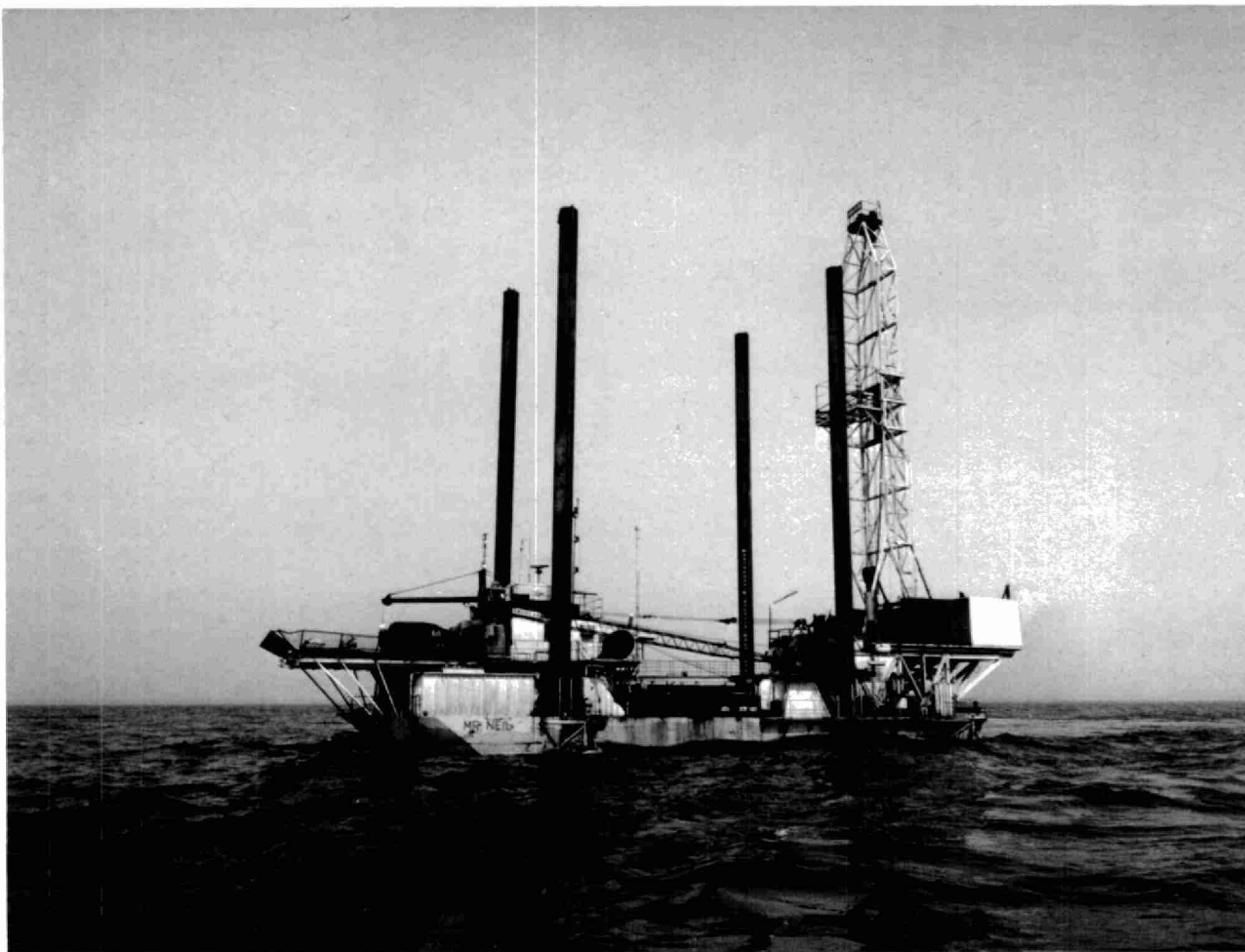
#### LABELLING

Manufacturers of gas and oil appliances may make application to the Energy Branch for a special appliance approval label. A Departmental inspector will affix the label once he is satisfied that the appliance is acceptable.

Over 2,400 labels were affixed to various appliances during 1968. The Licensing Section handles the administrative details of the special approval labels as well.



*A staff engineer flow tests a natural gas well near Arthur.*



*Mr. Neil, a twin-hulled platform jack-up unit, was in active use as an offshore drilling rig on Lake Erie.*

The Petroleum Resources Section operates under authority of The Energy Act and Regulations made thereunder. Activities of the section include the licensing, regulation and inspection of exploration, drilling and production operations and facilities and the collection and dissemination of engineering and geological data and information. The administration and engineering offices of the Petroleum Resources Section are located in Toronto, while the geological and sample repository facilities are in Ottawa. The inspection staff operates from regional offices throughout southwestern Ontario.

During 1968 the Department's research and development program continued on the Ontario Well Data System. This project, initiated in 1964 by the Department and the University of Western Ontario, was modified for use on the IBM 360 system. These modifications have resulted in a significant increase in the efficiency and availability of the computer-produced geological maps and in the manipula-

tion of engineering and geological data from the more than 10,000 Ontario oil and gas wells included in the System. The computer applications are the responsibility of the Department's geological office in Ottawa while the computer facilities at the Ontario Department of Highways Toronto Data Centre are being utilized for general usage and continued development of the System.

In addition to the work being done in computer applications, continued emphasis is being placed on providing to industry, current geological and reservoir engineering reports. Considerable progress has been made in the revised gas well testing program and the data being submitted to the Department by industry are of considerably higher quality than those previously obtained. During 1968 a detailed study on subsurface disposal was carried out and a report, Paper 68-2, "Subsurface Disposal in Southwestern Ontario," was published.

In addition to the revised Exploration, Drilling and

Production Regulation, O. Reg. 420/68, which was filed in December, four spacing regulations were also made.

Exploration activity in the Province of Ontario showed a marked increase during 1968. This increase was centred in three areas: Lake Erie, Lambton and Huron Counties and the Hudson Bay-James Bay Lowlands.

#### GEOPHYSICAL ACTIVITY

Geophysical activity in Ontario resulted in a total of 19 crew months; 1 gravity and 18 seismic. Although in terms of crew months, most of this geophysical activity was concentrated in the Lambton-Huron County area, of the total of 2,191 linear miles of seismic surveys, 1,612 or 75 per cent of the coverage was in Lake Erie. Surveys were conducted in the Hudson Bay Lowlands and eastern Ontario but these entailed less than two crew months.

Unsatisfactory results from the recent drilling of seismic anomalies on land have resulted in differing opinions as to the merit of such geophysical applications in Ontario but it is the general opinion of industry that the new techniques and interpretations being developed will play an increasing role in future discoveries in the Province.

#### LEASING

Licences issued to lease Oil or Gas Rights totalled 143 and the total acreage acquired on land was in excess of 200,000 acres—a 35 per cent increase over the amount leased in 1967.

It is apparent that much of the leasing activity was directed towards the continued search for pinnacle reefs in the Lambton-Huron County area. This leasing trend has been continuing for the past three years and is reflected in the general increase in exploratory activity.

Transactions involving Crown acreage in southern Ontario were once again restricted to Lake Erie as the drilling ban on the other Great Lakes continued in effect.

**E13 Acreage Acquired on Land  
in 1968 for Gas and Oil Rights**

COUNTY	TOTAL ACREAGE
Bruce	300
Carleton	1,425
Elgin	13,098
Essex	12,816
Grey	1,000
Haldimand	1,291
Huron	60,527
Kent	22,465
Lambton	44,815
Middlesex	2,155
Norfolk	2,243
Northumberland	377
Oxford	8,459
Russell	5,228
Wellington	25,528
<b>Grand Total</b>	<b>201,727</b>

**E14 Acreage Acquired—Lake Erie**

YEAR	ACREAGE
1958	2,461,573
1966	641,584
1967	3,108,404
1968	3,108,035

At the end of 1967, there was virtually no open acreage in Lake Erie and the same situation persisted at the end of 1968, although some consolidation of holdings took place.

Forty-nine new exploratory licences (205,109 acres) were granted, while 49 licences (206,652 acres) were cancelled, surrendered or expired. Three new production leases (2,478 acres) were issued and two (1,308 acres) were surrendered.

At the end of 1968, there were 3,030,122 acres held in 641 licences and 77,913 acres held in 46 leases. A comparison with other years is shown.

On the United States' side of Lake Erie, the State of Ohio has suspended indefinitely any plans to lease offshore acreage for oil or gas exploration. New York State is expected to have a lease sale in early 1969. The State of Pennsylvania had one small sale during 1968 and granted leases to two companies. Although no exploration activity has taken place on this acreage, it is quite probable that 1969 will see the initiation of at least one program.

In the Hudson Bay-James Bay Lowlands, considerable leasing activity has created what is a reflection of the general interest being shown in offshore Hudson Bay and in the overall prospects of the Canadian North. Aquitaine Company of Canada Limited holds, on behalf of a group of companies, an exploratory licence covering 986,560 acres in the north-west corner of the Province which will be developed in conjunction with other holdings in Manitoba and offshore Hudson Bay. The same group of companies received Cabinet approval for an additional 3.2 million acres in the Moose River Basin south-west of Moosonee and a licence for oil and gas exploration will be issued in early 1969. Several other companies have shown interest in adjacent acreage and it is expected that during 1969 upwards to ten million acres will be leased.

#### DRILLING

A summary of well completions is shown geographically and by class and results. The total number of completions, 188, represents a 20 per cent increase over 1967, while the total footage drilled, 316,924 feet, is a significant 35 per cent increase over the previous year.

During 1968, 70 exploratory tests were drilled and a remarkable 30 per cent were successful.

Of the 21 successful tests, 12 were drilled on land and nine were drilled in Lake Erie. The year's major discovery,



*A diver descends into Lake Erie to examine an underwater well head below a marked buoy.*

#### E15 Drilling Summary by Depth

AGE	DEVONIAN		SILURIAN				ORDOVICIAN		CAMBRIAN	TOTALS	
Series	All		Salina—Guelph		Clinton—Cataract		All		All		
Class	E	D	E	D	E	D	E	D	E	D	
Gas			5	9	13	26	1		2	5	40
Oil		2		2						5	9
Dry	6		33	13	11	14	1		1	3	52
Sub-Totals	6	2	38	24	24	40	2		3	13	79
Other		8		62		64		2		16	152
		3		9				9		15	36
Totals	11				135		11		31		188

the Terminus Pool, was drilled in Sombra Township, Lambton County, by Ram Petroleum Limited. Subsequent drilling has provided sufficient information to establish this pinnacle reef discovery as the most significant reef discovered within the past several years. Also in Sombra Township, Imperial Oil Limited encountered a reef south of the Ram discovery and although the importance of this second reef has not been adequately assessed, it is not believed to be of major importance.

In the northerly portion of the peninsula, exploratory drilling resulted in the discovery of the Arthur pool in Wellington County and a second pool in West Wawanosh, north-east of the Dungannon pool, discovered in 1967. In both instances, the economic significance of these discoveries will require further evaluation, although both are considered to have small gas reserves.

Of the nine successful Lake Erie wells, seven were completed in the Clinton-Cataract formations and two were

# E16 Summary of Well Completions 1968

County Township	EXPLORATORY					DEVELOPMENT					No.	OTHER	
	G	O	D	T	Footage	G	O	D	T	Footage		Type	Footage
<b>Carleton</b>													
Osgoode											3	S.T.	7,172
<b>Elgin</b>													
Aldborough			1	1	493								
Dunwich			1	1	464		5	1	6	21,942			
Lake Erie	5 <sup>1</sup>		8	13	27,079	2		3	5	9,082			
<b>Essex</b>													
Colchester S.			1	1	918								
Lake Erie			3	3	3,245	2		2	4	4,175			
<b>Grey</b>													
Egremont	1		1	2	4,457								
<b>Haldimand</b>													
Cayuga N.						6		1	7	4,855			
<b>Hastings</b>													
Murray											1	S.T.	443
<b>Huron</b>													
Stephen			1	1	1,976								
Wawanosh W.	1		1	2	3,511								
<b>Kent</b>													
Camden									1	1,597			
Chatham									1	1,935			
Lake Erie	2		3 <sup>2</sup>	5	6,147	1		2	3	3,647			
Raleigh			1	1	3,772								
<b>Lambton</b>													
Bosanquet			2	2	4,282								
Brooke			1	1	425		2		2	3,417			
Dawn			2	2	3,931								
Enniskillen			4	4	9,002		2		2	926			
Moore			5	5	12,249	1		2	3	7,058	8	6S. 2B.	18,530
Plympton			1	1	2,376								
Sarnia			3	3	6,117								
Sombra	2		3	5	9,789	5		4	9	18,698	2	D.	2,488
<b>Lincoln</b>													
Gainsborough						2			2	1,145			
<b>Middlesex</b>													
McGillivray			2	2	3,743								
Mosa								1	1	1,806	1	D.	850
<b>Norfolk</b>													
Charlotteville			2	2	615	6		4	10	12,855			
Houghton	1			1	1,470								
Lake Erie			2	2	3,700	2		2	4	5,106			
Townsend	3			3	2,601	3		1	4	3,460			
Walsingham S.	1			1	1,439			1	1	1,420			
Woodhouse	1			1	960	4		2	6	6,030			
<b>Northumberland</b>													
Murray											8	S.T.	3,853
<b>Oxford</b>													
Blandford						3		1	4	11,656			
Blenheim	1			1	2,900	1			1	2,886	1	D.	800
Dereham								1	1	3,344			
<b>Russell</b>													
Russell											12	S.T.	24,773
<b>Welland</b>													
Lake Erie	2		4	6	7,327								
Wainfleet						1			1	598			
<b>Wellington</b>													
Arthur	1			1	2,385	1			1	2,401			
<b>TOTALS</b>	<b>21</b>		<b>52</b>	<b>73</b>	<b>127,373</b>	<b>40</b>	<b>9</b>	<b>30</b>	<b>79</b>	<b>130,642</b>	<b>36</b>		<b>58,909</b>

GRAND TOTAL - 188 Wells, 316,924 Feet

Footnotes:

1 One Cambrian test, show of oil in Cambrian, Silurian Gas Producer.

2 Included one lost hole.

Code: S.T. - Stratigraphic Test

S. - Gas Storage

B. - Brine

D. - Disposal



### E17 Success Ratios 1968

	GAS	OIL	DRY	TOTALS	SUCCESS %
<b>EXPLORATORY</b>					
Devonian			6	6	0.0
Silurian					
Salina-Guelph	5		33	38	13.2
Clinton-Cataract	13		11	24	54.2
Ordovician	1		1	2	50.0
Cambrian	2		1	3	66.7
<b>Totals</b>	<b>21</b>		<b>52</b>	<b>73</b>	<b>28.8</b>
<b>DEVELOPMENT</b>					
Devonian		2		2	100.0
Silurian					
Salina-Guelph	9	2	13	24	45.8
Clinton-Cataract	26		14	40	65.0
Ordovician					
Cambrian	5	5	3	13	76.8
<b>Totals</b>	<b>40</b>	<b>9</b>	<b>30</b>	<b>79</b>	<b>62.0</b>

completed in the Salina-Guelph formations off Kent County. The most important discoveries were by The Consumers' Gas Company off Welland County, with two successful wells, and off Elgin County on acreage held jointly by Consumers' and Pan American Petroleum where six successful wells were completed. Several of the discoveries were considered significant and offer promise for additional success in 1969.

The availability of offshore drilling equipment improved greatly during 1968 as two jack-up units, Timesaver II and Mr. Neil, the latter a twin hulled platform, from the Gulf Coast were available. The Nordrill, which is the old lake freighter *Simcoe* converted to a floating drilling vessel, was also active during the year and these three units were responsible for a large percentage of wells drilled in the lake. Slated for 1969 is a new three-million-dollar jack-up unit being built in Canada for Kenting Limited. Also Translake I and, possibly, the Translake II, both of which were constructed several years ago but have been inactive, will undergo design modifications and at least one of these units should be available in 1969.

### E18 Ontario Oil Fields, Wells and Production 1968

COUNTY	Field or Pool	TOWNSHIP	PRODUCING HORIZON	WELLS		PRODUCTION IN BARRELS
				New	Active	
Brant, Oxford						
	Gobles	Burford, Blenheim	Cambrian		39	76,114
	Innerkip	Blandford	Cambrian		2	900
Elgin, Middlesex						
	Rodney	Aldborough	Dundee-Detroit River		166	397,312
	Wallacetown	Dunwich	Dundee-Detroit River		16	1,149
	Willey	Dunwich, Ekfrid	Cambrian	5	14	125,560
Essex						
	Colchester	Colchester South	Trenton		5	12,608
	Malden	Malden	Trenton		6	5,772
Kent						
	Bothwell,					
	Thamesville	Camden, Zone	Dundee-Detroit River		41	9,185

*continued next page*

The use of cable tool equipment in Lake Erie has been restricted to Long Point Bay and only one platform, that owned by Place Gas and Oil Company Limited, was active during 1968.

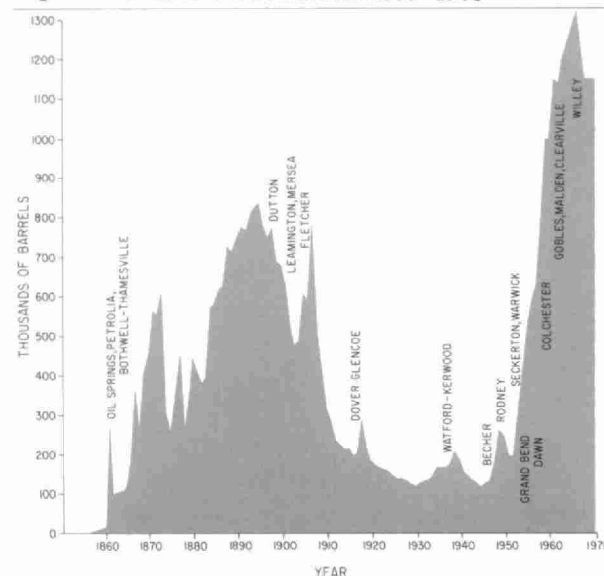
The marked increase in drilling activity during 1968 shows signs of a further increase during 1969, as a high level of expectancy prevails throughout the industry for both land and offshore operations.

### OIL

Oil production during 1968 showed a decrease of seven per cent from the corresponding 1967 production figures. Production of fields and pools during 1968 is shown.

The Becher, Rodney and Willey fields were the major producers, accounting for over 50 per cent of total production. Clearville, Gobles and Seckerton supplied a further 20 per cent. Becher and Clearville increased 11 and 13 per cent respectively over 1967, while major de-

Figure 6: Ontario Oil Production 1860 - 1968

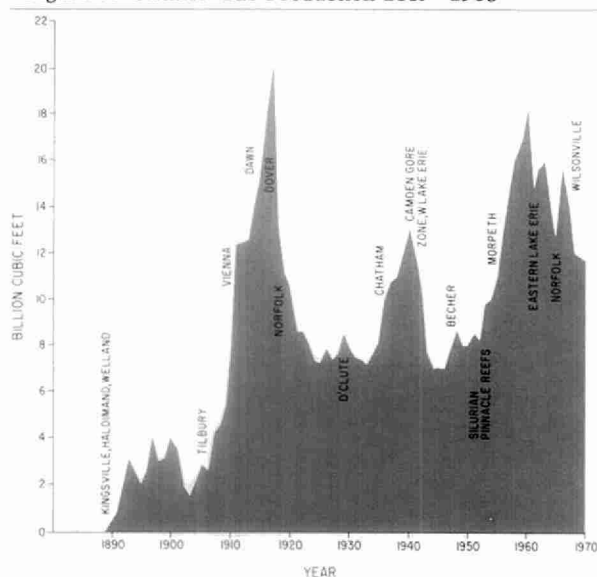


# E18 Ontario Oil Fields, Wells and Production 1968 *continued*

COUNTY	Field or Pool	TOWNSHIP	PRODUCING HORIZON	WELLS		PRODUCTION IN BARRELS
				New	Active	
Chatham	Chatham	Chatham	Guelph		2	3,067
	Clearville	Orford	Cambrian		13	65,893
	Dover	Dover	Trenton		1	420
	Dresden	Camden, Chatham	Guelph		1	411
	Stewart	Chatham	Dundee-Detroit River		1	58
<b>Lambton</b>						
Lambton	Becher	Sombra	Salina		27	109,962
	Brigden	Moore	Salina		2	4,219
	Brooke	Brooke	Guelph	2	3	2,851
	Clay Creek	Sombra	Guelph		1	2,569
	Colinville	Moore	Guelph		1	335
Lambton	Corunna	Moore	Salina-Guelph		8	37,933
	Dawn 156	Dawn	Guelph		1	12,278
	Dawn-Sombra	Dawn, Sombra	Guelph		11	21,250
	Kimball	Moore	Guelph		1	518
	Oil Springs	Enniskillen	Dundee-Detroit River		443	53,019
	Petrolia	Enniskillen	Dundee-Detroit River		89	22,618
	Seckerton	Moore	Guelph		8	98,990
	Shetland (Dev)	Euphemia	Dundee-Detroit River		1	180
	Shetland (Sil)	Euphemia	Guelph		1	60
	Sombra	Sombra	Guelph		1	52
	Sutorville	Brooke	Guelph		3	2,821
	Talford	Moore	Guelph		1	400
	Wanstead	Brooke, Enniskillen	Guelph		3	20,308
	Warwick	Warwick	Guelph		1	17,544
	Wilkesport	Sombra	Guelph			72 <sup>1</sup>
	Wilsoncroft	Enniskillen	Dundee-Detroit River	2	3	98
<b>Middlesex, Huron</b>						
Middlesex, Huron	Glencoe	Mosa	Dundee-Detroit River		119	31,167
	Grand Bend	McGillivray, Stephen	Guelph		2	10,622
	Mosa	Mosa	Salina		1	2,464
<b>TOTALS</b>				<b>9</b>	<b>1,038</b>	<b>1,150,779</b>

1 Oil produced from gas wells.

Figure 7: Ontario Gas Production 1889 - 1968



creases were Rodney 17, Willey 8 and Gobles 16 per cent. Other important producing fields were Corunna, Dawn-Sombra, Glencoe and Oil Springs.

Some questions arose during the year regarding the chemical characteristics of Devonian crude oil and the corrosive effect of the relatively high mercaptan content. Of particular concern has been the Rodney crude and, as a result, production was temporarily curtailed during 1968. The problem is presently receiving the attention of both the operators and the refineries, but no decision has yet been reached regarding any further cutback in production.

## NATURAL GAS

Natural gas produced from wells in Ontario during 1968 decreased 15 per cent from 1967. Production by fields and pools during 1968 is shown. The general decrease in gas production during the year resulted from a normal decline in the Sombra-Moore-Plympton fields. Although gas reserves in Lake Erie increased appreciably, output from the lake showed a ten per cent decrease, as pipeline facilities for recent discoveries were not installed until the latter part of

# E19 Ontario Natural Gas Production by Fields 1968

COUNTY	FIELD OR POOL	TOWNSHIP	FORMATION	WELLS		AVERAGE SHUT-IN W.H.P. P.S.I.G.	PRODUCTION IN MCF1
				Suspended	Active		
Elgin		Lake Erie	Clinton-Cataract	9			
	<i>Vienna, Richmond</i>	Bayham		5	23	73	1,123
	<i>Cowal</i>	Dunwich	Salina-Guelph		3	374	15,059
	<i>Mosald</i>	Aldborough, Dunwich			10	431	80,406
	<i>Willey</i>	Dunwich, Ekfrid					131,269 <sup>2</sup>
Essex		Lake Erie	Salina-Guelph	6			
	<i>Kingsville-Leamington</i>	Gosfield South		2	7	187	10,521
	<i>Malden</i>	Malden		5			
	<i>Oxley</i>	Colchester			2	370	18,635
Haldimand	<i>Haldimand</i>	Lake Erie		27	104	224	916,694
		All Townships		35	642	124	
Brant		Tuscarora	Clinton-Cataract		15	194	358,121
Lincoln		Caistor		2	24	56	10,284
		Gainsborough			3	138	
Wentworth		Binbrook			1	50	1,335
Halton	<i>Acton</i>	Esquesing	Black River	1	14	182	7,786
	<i>Hornby</i>	Trafalgar		3	3	190	2,586
Huron	<i>Bayfield</i>	Stanley	Salina-Guelph		2	98	121,728
	<i>Botany</i>	Howard	Salina-Guelph	5			
	<i>Camden Gore</i>	Camden			14	414	56,975
	<i>Chatham</i>	Chatham		1	24	334	192,641
	<i>Chatham Gore</i>	Chatham					2,622
	<i>D'Clute</i>	Lake Erie	Trenton	8	10	424	554,034
		Raleigh		1	15	199	57,214
	<i>Dover</i>	Dover		9	1	172	13,530
	<i>Dresden</i>	Chatham, Camden		4			2,413
Kent	<i>Guilds</i>	Harwich		5			1,436
	<i>Lake St. Clair</i>	Lake St. Clair		4			
	<i>Morpeth</i>	Lake Erie	Salina-Guelph				2,056
		Howard		4	8	213	54,692
	<i>Tilbury</i>	Lake Erie		10	79	294	1,571,986
		Romney, Tilbury E.		3	83		391,427
	<i>Wolfe</i>	Harwich			1	535	11,297
	<i>Zone</i>	Zone	Guelph	7	41	290	102,307
		Lake Erie		1			
	<i>Avonry</i>	Sombra	Salina-Guelph		1	586	29,074
	<i>Becher East</i>				2	420	34,285
	<i>Becher West</i>	Sombra		7	32 <sup>3</sup>	207	215,598
	<i>Brigden</i>	Moore			2	504	114,177
Lambton	<i>Charlemont</i>	Sombra	Guelph	1	1	460	61,741
	<i>Courtright</i>	Moore		2	3	788	205,299
	<i>Dawn Misc.</i>			4	16	395	143,667
	<i>Dawn 156</i>	Dawn		7	9 <sup>4</sup>		317,951
	<i>Dawn 167</i>	Dawn, Enniskillen	Salina-Guelph	1	4		1,930,600
	<i>Enniskillen 26</i>			1	1	828	7,559
	<i>Enniskillen 28</i>	Enniskillen			2	244	31,599
	<i>Mandaumin</i>	Plympton			1	143	32,100
	<i>Seckerton</i>	Moore					
	<i>Sombra</i>	Sombra		1			5,718
	<i>Wilkesport</i>	Sombra			3	136	1,803,740

continued

E19 Ontario Natural Gas Production by Fields 1968 *continued*

Middlesex	Wardsville	Mosa	Salina-Guelph	1	10	182	59,225
Norfolk	Norfolk	Lake Erie All Townships	Clinton-Cataract	18	25	440	422,386
	Wilsonville			27	514	207	1,394,282
	Wilsonville South	Townsend		3	8	318	30,236
					6	232	36,184
Oxford	Gobles	Blenheim	Cambrian		12	129	27,874
	Innerkip	Blandford	Cambrian		3	271	116,336
	Norwich South	South Norwich	Clinton-Cataract		6	215	6,730
	Verschoyle W.	Dereham	Guelph		4	395	2,145
Welland	Welland	Lake Erie All Townships	Clinton-Cataract	2	4		185,491
				77	188	76	161,655
GRAND TOTALS :				309	1,986		12,065,829

- 1 at 14.73 p.s.i.a.
- 2 Solution gas from oil wells.
- 3 Includes oil wells from which solution gas is collected.
- 4 Field used for storage. Production is solution gas.



*The shale shaker in operation on the Timesaver II jack-up unit which is used as offshore drilling equipment.*

## E20 Lake Erie Gas Wells and Production 1968

COUNTY	FIELD OR POOL	WELLS		AVERAGE W.H.P. p.s.i.g.	PRODUCTION Mc. 1
		SUSPENDED	ACTIVE		
Elgin		9			
Essex	<i>Mersea</i>	6			
Kent	<i>D'Clute</i>	8	10	424	554,034
	<i>Morpeth</i>				2,056
	<i>Tilbury</i>	10	79	294	1,571,986
		1		420	
Haldimand	<i>Haldimand</i>	27	104	224	916,694
Norfolk	<i>Norfolk</i>	18	25	440	422,386
Welland	<i>Welland</i>	2	4		185,491
<b>Totals</b>		<b>81</b>	<b>222</b>		<b>3,652,647</b>

1 at 14.73 p.s.i.a.

the year and, hence, production is not reflected in the 1968 statistics. The Wilkesport pool, which was the Province's largest single producing pool in 1967, was the major contribution in the overall decline in total gas production as output from the pool declined more than two billion cubic feet (b.c.f.) to less than half of its 1967 total. It is expected that during 1969 the Terminus pool will begin production and output should more than offset normal declines.

### GAS STORAGE

During 1968, nine of the ten authorized underground gas storage pools were active. The Dawn 3 pool remained inactive. Three pools, Bickford, Sombra and Zone, which were previously designated as gas storage areas, also remained inactive as no application to The Ontario Energy Board for authorization to inject gas was made.

The total working capacity of the operating pools is approximately 100 b.c.f. and all but the Crowland pool near Welland are located in Lambton County. A summary of these pools is shown.

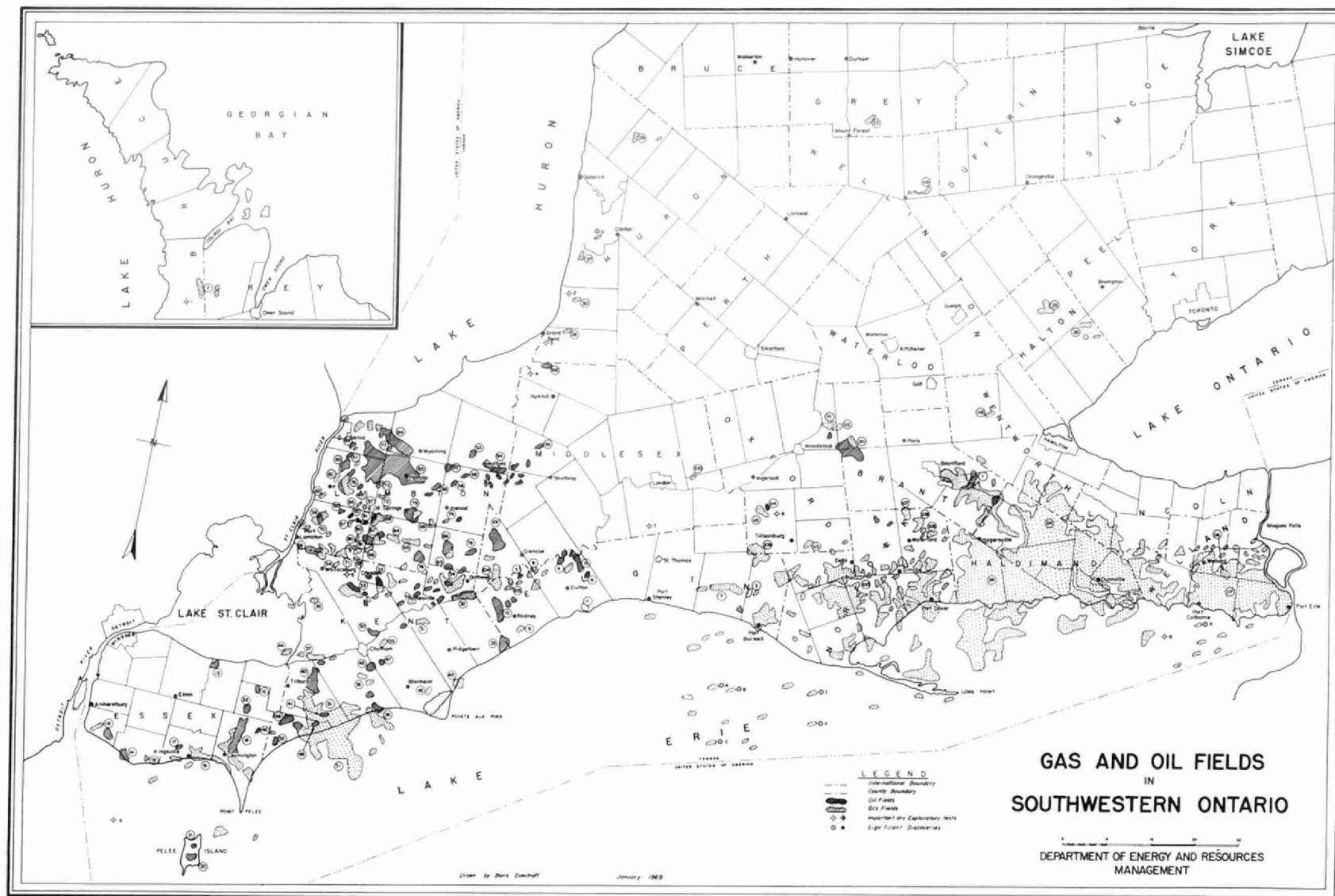
Withdrawals during the operating period October 1, 1968 to March 31, 1969 totalled 46.9 b.c.f., a three per cent increase over the corresponding 1967-68 period. Volume of gas injected into storage during the April 1 to September 30, 1968 period decreased nearly nine per cent to 43.1 b.c.f.

During 1968, The Consumers' Gas Company carried out an extensive drilling program in Russell County to determine the extent of a Cambrian aquifer for use in storing gas from western Canada. A pilot operation will be undertaken in early 1969 to evaluate all aspects of the project and should the scheme prove successful, the resultant storage should affect the availability of gas in eastern Ontario.

## E21 Gas Storage

RESERVOIR	ZONE	STATUS	OPERATOR	WORKING RESERVOIR CAPACITY (billion cu. ft.)	ORIGINAL RESERVOIR PRESSURE (p.s.i.g.)
Dawn 47-49	G,A-1	Active	Union	3.38	865
Dawn 49-85	G,A-1,A-2	Active	Union	4.01	865
Dawn 156	G,A-1	Active	Union	20.50	880
Payne	G,A-1	Active	Union	12.53	877
Waubuno	G,A-1	Active	Union	6.15	931
Corunna	G,A-1	Active	Tec.	3.83	943
Crowland	Whirlpool	Active	Cons.	0.62	500
Seckerton	G,A-1	Active	Tec.	9.60	950
Dawn 3	A-1,A-2	Inactive	Union	0.88	760
Kimball-Colinville	G,A-1	Active	Tec.	35.00	919
Bickford	G,A-1	Desig.	Imp.	13.80	986
Sombra	G,A-1	Desig.	Imp.	1.81	995
Zone	A-1,A-2	Desig.	Union	8.46	721
<b>Total</b>				<b>120.57</b>	

G Guelph Formation  
A-1,A-2 Salina Formation  
Desig. Designated  
Union Union Gas Company of Canada Limited  
Imp. Imperial Oil Limited  
Tec. Tecumseh Gas Storage Limited





Index of Gas & Oil Fields		
PRODUCING FORMATION		
D	Devonian	S Silurian O Ordovician
C	Cambrian	*Inactive
<b>ESSEX COUNTY</b>		
1.	MALDEN (GAS-S & OIL-O)	
2.	COLCHESTER (OIL-O)	
3.	KINGSVILLE-LEAMINGTON-MERSEA (GAS-S)	
4.	PELEE ISLAND (OIL-S)	
5.	STAPLES (GAS & OIL-S)	
6.	COMBER (OIL & GAS-S)	
7.	*BELLE RIVER (OIL-D)	
<b>KENT COUNTY</b>		
8.	LAKE ST. CLAIR (GAS-S)	
9.	ELECTRIC (GAS-C)	
10.	DOVER (GAS & OIL-O)	
11.	FLETCHER (OIL-S)	
12.	TILBURY (GAS & OIL-O)	
13.	GLENWOOD (OIL-S)	
14.	ROMNEY (OIL-D)	
15.	WHEATLEY (OIL-S)	
16.	NEW WHEATLEY (GAS-S)	
17.	*STEVENSON (OIL-O)	
18.	D'CLUTE (GAS-S)	
19.	*DOYLES (GAS-S)	
20.	*KIPP (OIL-D)	
21.	*RICHARDSON'S SIDING (OIL-D)	

22.	WOLFE (GAS-S)	
23.	GUILDS (GAS-S)	
24.	*BOTANY (GAS-S)	
26.	CLEARVILLE (OIL-C)	
27.	BOTHWELL-THAMESVILLE (OIL-D)	
28.	ZONE (GAS-S)	
29.	CHATHAM-DRESDEN-CAMDEN GORE (GAS & OIL-S)	
30.	*CHATHAM GORE (GAS-S)	
<b>LAMTON COUNTY</b>		
31.	EAST BECHER (GAS-S)	
32.	WEST BECHER (GAS & OIL-S)	
33.	SOMBRA (GAS-S)	
34.	BICKFORD (GAS & OIL-S)	
35.	AVONRY-WILKESPORT (GAS-S)	
36.	*DUTHILL (GAS-S)	
37.	DAWN (GAS & OIL-S)	
38.	*FLORENCE (OIL-D) (OAKDALE)	
39.	DAWN 156 (GAS & OIL-S)	
40.	WAUBUNO (GAS-S)	
41.	BRIGDEN (GAS & OIL-S)	
42.	KIMBALL-COLINVILLE (GAS & OIL-S)	
43.	PAYNE (GAS-S)	
44.	SECKERTON (GAS & OIL-S)	
45.	CORUNNA (GAS & OIL-S)	
46.	TALFORD (OIL-S)	
47.	PLYMPTON-SARNIA (OIL & GAS-D)	
48.	MANDAUMIN (GAS-S)	
49.	PETROLIA (OIL-D)	
50.	WANSTEAD (OIL-S)	
51.	*WILSON CROFT (OIL-D)	

52.	ENNISKILLEN NO. 28 (GAS-S)	
53.	*ENNISKILLEN NO. 26 (GAS-S)	
54.	OIL SPRINGS (GAS-S, OIL-D)	
55.	*DAWN 167 (GAS-S)	
56.	SHETLAND (GAS-S)	
57.	DANTE (OIL-D)	
58.	McCREADY (OIL-D)	
59.	*INNWOOD (OIL-D)	
60.	BROOKE 5-12 (OIL-S)	
61.	SUTORVILLE (OIL-S)	
62.	*WATFORD-KERRWOOD (OIL-D)	
63.	WARWICK (OIL-S)	
91.	COURTWRIGHT (GAS-S)	
<b>HURON COUNTY</b>		
95.	DUNGANNON (GAS-S)	
64.	BAYFIELD (GAS-S)	
65.	*ZURICH (GAS-S)	
66.	*DASHWOOD (GAS-S)	
<b>MIDDLESEX COUNTY</b>		
67.	GRAND BEND (OIL-S)	
68.	*ADELAIDE (OIL-D)	
69.	*CRUMLIN (GAS-S)	
70.	GLENCOE (OIL-D)	
<b>ELGIN COUNTY</b>		
71.	MOSALD (GAS & OIL-S)	
72.	RODNEY (OIL-D)	
73.	*NEW GLASGOW (GAS-C)	
74.	WILLEY (OIL-C)	
75.	COWAL (GAS-S)	
76.	*DUTTON (OIL-D)	

77.	WALLACETOWN (OIL-D)	
78.	*MALAHIDE (GAS-S)	
79.	BAYHAM (GAS-S)	
<b>NORFOLK COUNTY</b>		
80.	NORFOLK (GAS-S)	
93.	WILSONVILLE-WILSONVILLE S. (GAS-S)	
<b>OXFORD COUNTY</b>		
81.	SOUTH NORWICH (GAS-S)	
82.	BROWNSVILLE (GAS-S)	
83.	INNERKIP (GAS & OIL-C)	
84.	GOBLES (GAS & OIL-C)	
92.	*VERSCHOYLE W. (GAS-S)	
<b>BRANT COUNTY</b>		
85.	HALDIMAND (GAS & OIL-S)	
<b>HALDIMAND COUNTY</b>		
85.	HALDIMAND (GAS-S)	
<b>WELLAND COUNTY</b>		
86.	WELLAND (GAS-S)	
<b>WENTWORTH COUNTY</b>		
87.	*ROCKTON (GAS-C)	
<b>HALTON COUNTY</b>		
88.	HORNBY (GAS-O)	
89.	ACTON (GAS & OIL-O)	
<b>BRUCE COUNTY</b>		
90.	*HEPWORTH (GAS-O)	
<b>GREY COUNTY</b>		
94.	EGREMONT (GAS-O)	

## PERSONNEL BRANCH

This Branch is responsible for recruitment and staffing, position administration, training, employee relations and personnel records. The Branch also provides advice and assistance in manpower and organizational planning and generally promotes effective personnel management within the Department.

### RECRUITMENT AND STAFFING

The Branch handled both in-service and outside job advertising; recruitment of seasonal and permanent staff, including university recruiting; processing of transfers and promotions and maintaining complement control.

The recruitment program for seasonal and permanent professional staff covered eight universities. Six major competitions were held and 30 new staff were recruited into the professional, technical and clerical areas. There were 17 resignations, two dismissals and two deaths. Three people transferred out of the Department. The net increase in staff was six.

### POSITION ADMINISTRATION

Position administration involved identifying positions; preparing position specifications and organization charts; recommending appropriate classification; assessing the need for new or revised class series; salary surveys; and placing qualified personnel in positions.

Ten positions were established and 60 prepared and submitted for classification. Twenty-two permanent appointments were made.

### TRAINING

The training program covered Departmental training courses; processing requests for financial assistance for educational purposes; recommending attendance at Department of Civil Service training courses and courses provided by outside agencies.

A total of 16 people attended the supervisory, management development, data processing, basic statistics, instructional techniques, conference leadership, effective speaking, filing systems and senior officers' courses given by the Department of Civil Service. Eighteen people received approval for financial assistance, 13 for 100 per cent and five for 50 per cent reimbursement.

### EMPLOYEE RELATIONS

The Branch investigated problems involving personnel; counselled employees; advised and assisted supervisors and management and acted as a liaison with Department of Civil Service, Staff Relations Branch, Treasury Board and Civil Service Association of Ontario. A liaison was also maintained with United Appeal, Blood Donor Campaign and Cancer Society.

## PERSONNEL RECORDS

The Branch processed nominations, appointments, separations, leaves of absence, merit increases, salary revisions, group insurance applications and related transactions; maintained attendance and vacation records and employee personal files.

## OTHER ACTIVITIES

Twenty boys between the ages of 16 and 19 participated in the Junior Conservationist Award Program. Preliminary instruction was given at the Albion Hills Conservation School then the boys were actively involved in Conservation projects and studies in several Conservation Authorities.

### P1 Number of Employees by Branch

	COMPLEMENT MARCH 31/68	ON STAFF MARCH 31/68	COMPLEMENT MARCH 31/69	ON STAFF MARCH 31/69
Energy Branch	63	60	65	60
Conservation Authorities Branch	55	53	57	57
Administrative Services Branch	43	38	44	39
Ontario Energy Board	10	9	10	10
Main Office	8	8	8	8
Information Services	3	3	3	3
Personnel	2	2	2	2
<b>Total</b>	<b>184</b>	<b>173</b>	<b>189</b>	<b>179</b>

### P2 Number of Professional Employees

	FORESTERS	AGROLOGISTS	ENGINEERS	MISC.	TOTAL
March 31, 1968	15	10	17	11	53
March 31, 1969	15	11	20	12	58

### P3 Total Number of Employees on Staff for the end of each month for the Fiscal Year 1968-69

	HEAD OFFICE			FIELD			GRAND TOTAL
	REGULAR	UNCLASSIFIED	TOTAL	REGULAR	UNCLASSIFIED	TOTAL	
1968							
April	112	3	115	59	4	63	178
May	113	8	121	59	37	96	217
June	114	8	122	60	57	117	239
July	118	7	125	62	58	120	245
August	116	7	123	62	60	122	245
September	118	7	125	63	37	100	225
October	118	2	120	63	4	67	187
November	118	2	120	64	2	66	186
December	116	4	120	63	3	66	186
1969							
January	116	4	120	62	4	66	186
February	115	4	119	62	1	63	182
March	115	3	118	62	1	63	181
Average	116	5	121	62	22	84	205

### P4 Staff Turnover of Regular and Probationary Employees During the Fiscal Year 1968-69

	RESIGNED	DISMISSED	RETIRED	DIED	SUPER- ANNUATED	INTER- DEPARTMENTAL TRANSFERS	TOTAL
Head Office	16	2	0	1	0	2	21
Field	1	0	0	1	0	1	3
<b>Totals</b>	<b>17</b>	<b>2</b>	<b>0</b>	<b>2</b>	<b>0</b>	<b>3</b>	<b>24</b>

Staff turnover for the year was 13.4%. This is the ratio of separations to total regular and probationary staff.



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